

Welcome

When we at Apple first considered putting together the Family System, we quickly realized that you, the owner, needed a single source to tell you how to get up and get going with your new Apple. We also wanted to tell you about each of the programs in the Family System, and a little about what the future holds for you and your Apple. And so this book was created.

In Part One you'll be putting it all together. We'll lead you step by step from the time you start unpacking 'til you're ready to turn on the Apple. The whole process should take you about an hour and a half (if you don't have too much help).

In Part Two, you do it. This section will teach you the basics of using your Apple. Go through each of the exercises, from start to finish, and **TAKE YOUR TIME**. When you've finished, you'll know all you'll need to run the programs that are included here in the Family System. And you'll learn a few new words, too.

And Part Three is where the fun begins. We've included information on each of seven **APPLICATIONS** (that's computerese for "ways of using") for your Apple. You'll learn how your Apple fits into your home, your work, and your leisure time...now and for years to come.

Welcome to the Apple Family System.

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Part 1

Putting It All Together

Unpacking

You've already opened the box marked "OPEN ME FIRST" (or you wouldn't be reading this book). This section will lead you through unpacking and inventory of your Family System.

First of all, you have a diskette labeled APPLE PRESENTS...APPLE, which was packaged along with this book. Put it aside in a safe place, but within easy reach. You'll be using it soon.

Before opening any boxes, clear some table space. Be careful of the heavy staples in the carton tops—they can bite. You'll need a Phillips screwdriver (you might even want to get a pair of pliers and remove the staples before reaching into the cartons).

Now you're confronted with three cartons. One of them contains the Apple II, a second contains the Disk Drive, and the third is labeled THE FAMILY SYSTEM. Open that one first.





Got Everything?

- A Box Containing the Hand Controllers
 - A Box Containing the RF Modulator
 - These Ready-to-Run Programs: Apple Writer, Personal Filing System, Personal Finance Manager, Typing Tutor, Apple Invaders, Decathlon, and Adventure.
 - The Educational Software Directory
- Set these items aside while you unpack the Computer and the Disk Drive.



THE COMPUTER

1. Open the largest of the cartons: this is the computer. The end to open is marked. Remove the smaller carton just inside the box. This is the Accessory Box. Set it aside for a moment.

2. Having removed the accessory box, you can open the cardboard packing and see the computer itself in a plastic bag. The Apple is very sturdy and will withstand some rough handling, but be careful with it. No need to invite trouble if you don't have to.

WARNING: If you pull the computer out of the box by pulling on the packing material, the material may spring apart allowing the Apple to fall free and be damaged. Please follow the instructions.

3. Hold the carton between your feet or knees. Then reach down inside the carton until you get your hand under the computer. Pull the computer, packing and all, out of the top of the box. Just remember to hold onto the Apple as the packing material springs away.

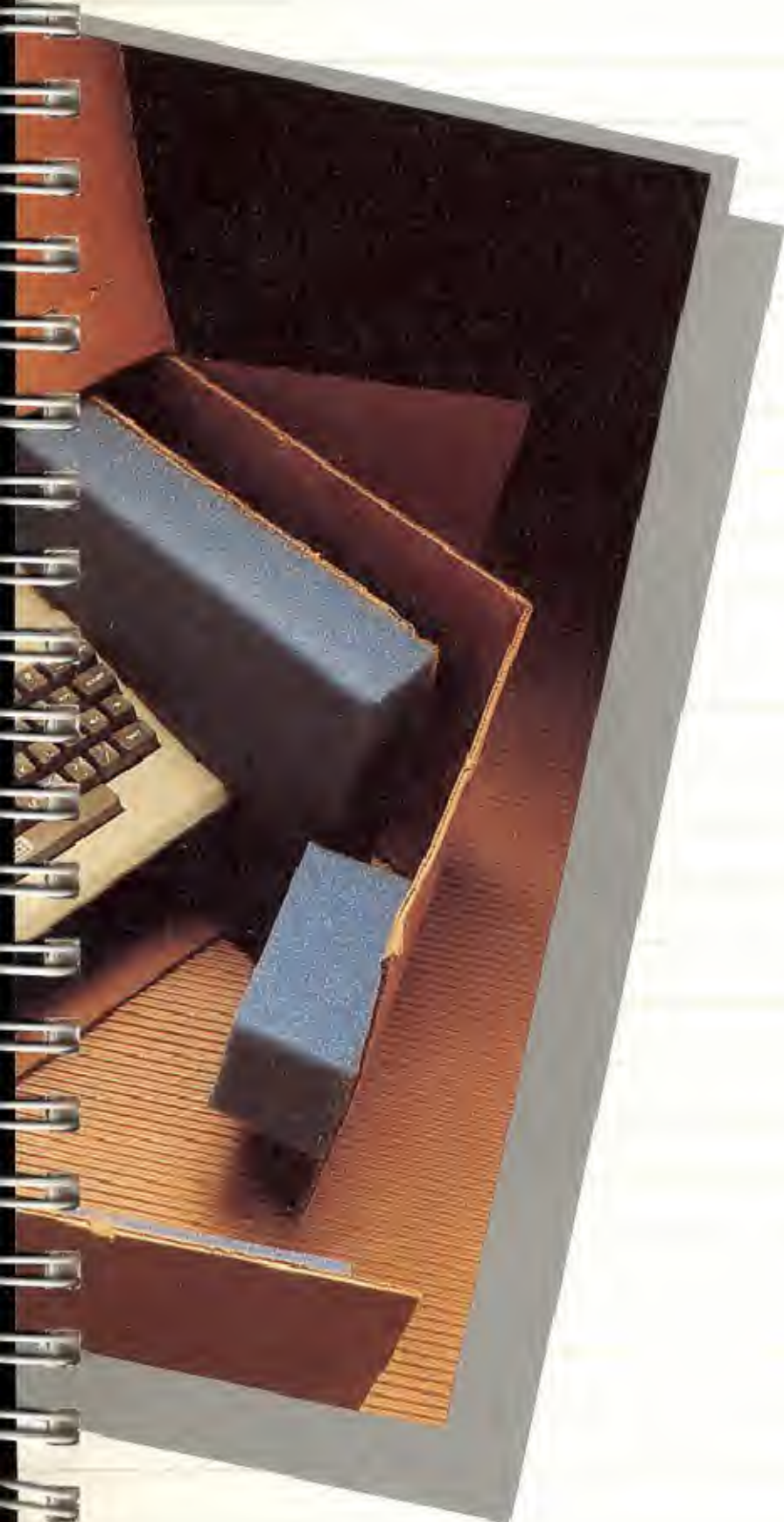
4. Take the computer out of its plastic bag and set it on the table.



Got Everything?

At this point, inventory the contents of the accessory box.

- A message entitled "Of Vital Importance." This doesn't apply to you; we wrote it for the folks who don't have this book to read instead.
- Three Manuals: The Applesoft Tutorial, Applesoft II BASIC Programming Reference, and Apple II Reference.
- A Catalog: Apple at a Glance
- The Power Cord for the Apple
- A Cable for a Video Monitor and an Adapter for a Video Cable (you won't need these if you're hooking up to a TV)
- Your Warranty Registration Card. If you didn't fill this out at the dealer, fill it out **RIGHT NOW** while all the pieces are right here in front of you.



THE DISK DRIVE

The last remaining box contains the Disk Drive. To remove it from its carton, grab a handful of blue foam padding with one hand and the edge of the carton with the other. Pull until you can get ahold of the Disk Drive itself and get it out of the carton. Set the drive on the table next to the computer. Now inventory the contents of this box.

- The Disk II Drive Itself
- The Connector Clamp (in a small plastic bag, taped to the top of the Drive)
- A Manual: The DOS Manual (This means "Disk Operating System," and it rhymes with "toss")
- A small, square white box marked "Disk II," which in turn contains:
 - An Interface Card, called the Disk Controller Card (leave it in its plastic bubble pack for now)
 - Labels for your Drive(s) (these are inside the bubble pack)
 - Three Diskettes: The DOS 3.3 System Master, DOS 3.3 BASICS, and a blank. Put these safely aside—but within reach—for now
- Your Warranty Registration Card. Fill this one out too. Right Now.





THE RF MODULATOR

This is the RF Modulator; you'll use it to connect the Apple and your TV.

- The Modulator and its attached cable
- The smaller cable that goes inside the Apple.

THE HAND CONTROLLERS

- The Hand Controllers—you may find them referred to as Game Paddles or Game Controllers in other manuals.



But Don't Turn It On!

WARNING! Before going on, locate the ON/OFF switch for the Apple on the rear right-hand side as you look at the back of the computer. Make sure that switch is in the OFF position.

Attaching the Power Cord

1. Locate the heavy black power cord. It was in the small box you removed from the computer carton.
2. Look at the end without the prongs and note that the middle hole is not quite in line with the others.
3. Match the plug with the power cord socket on the back of the Apple, and press firmly into place until the plug is firmly seated.
4. Plug the power cord into 115 volt 3-hole grounded outlet.

NOTE: The grounding (shielding from static discharge) is very important. If you have accumulated any static electricity, such as by walking on a carpet, and you touch the Apple and "give it a shock," you can damage the sensitive electronic parts.

5. But don't turn it on!



Pop the Top

Your Apple has been designed so that it is easy to put together. Just follow these instructions and you'll be up and running in no time at all.

- 1.** Look at the top of the computer itself. Notice that the large flat section behind the keyboard can be removed. Place your hands on top of the computer as shown in the picture.
- 2.** Place the fingertips of both hands under the lip of the cover at the back of the computer. Rest the heels of your hands on top of the Apple just outside the cover (to give your fingers something to pull against).
- 3.** Pull up with your fingers while holding the computer down with the heels of your hands. Give a good tug—it might take a lot of pull. Each side of the cover will snap loose.
- 4.** Lift the cover up and back. Set it to one side, out of your way.



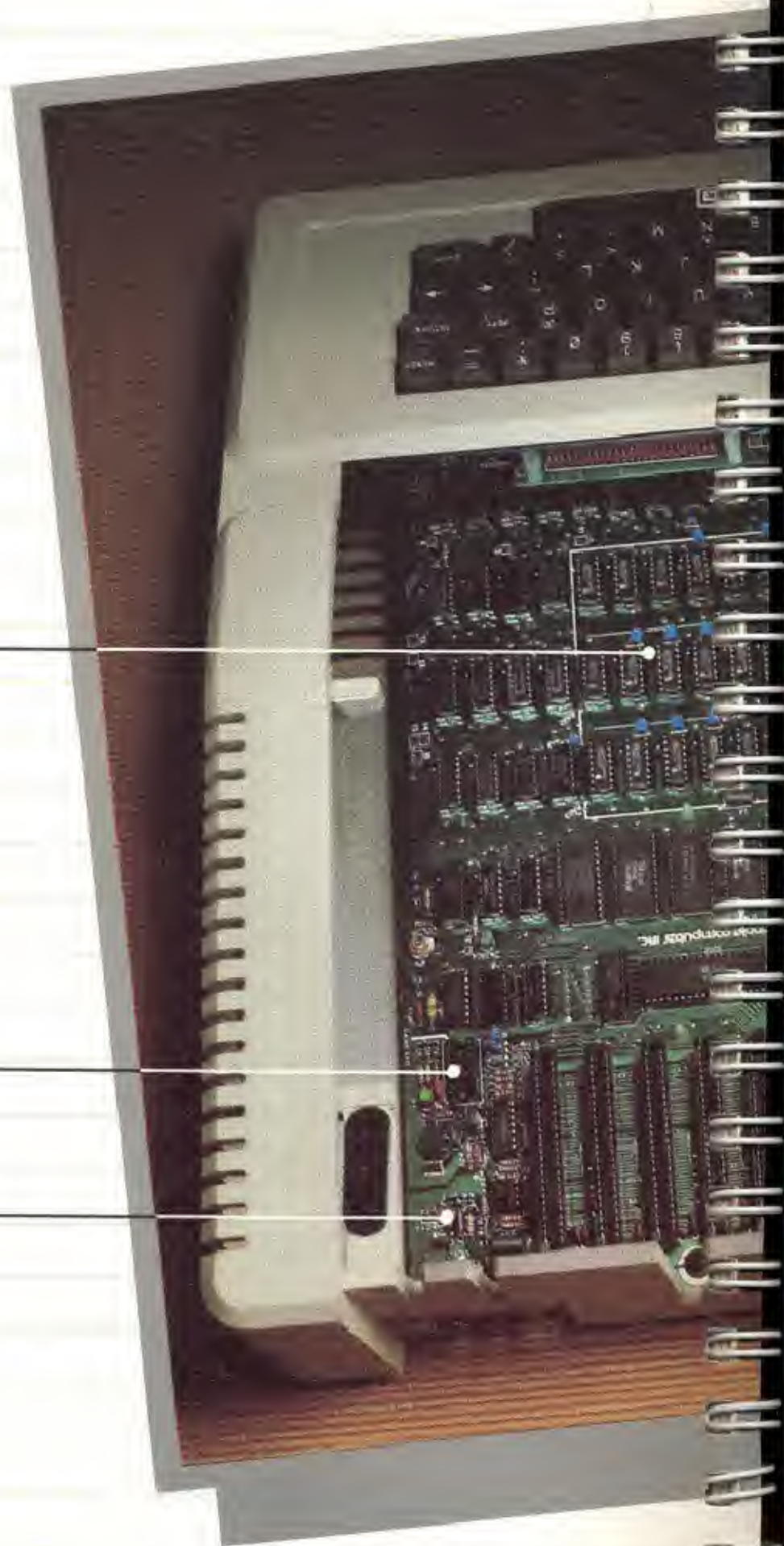
Inside the Apple

Take a close look at the inside of your Apple. In particular, note the places where the RF Modulator and the Hand Controllers will be attached.

Main Logic Board
(Mother Board)

Game I/O

RF Mod Connector





CTRL/RESET Switch

Power Supply

Slots

Installing the RF Modulator

1. Turn your TV around so you can get at the back of it.
 2. Locate the screws marked "VHF" on the back of your TV.
 3. Hold the silver box (this is the Modulator) near these VHF screws, flat against the back of the TV, switch side out, with the screws up.
 4. Using a screwdriver, loosen the screws on the TV, and remove the antenna leads (if any).
 5. Substitute the leads that are sticking out of the Modulator.
 6. Attach the antenna leads you just removed from the TV to the top of the Modulator.
- OPTIONAL: Use the tape on the back of the Modulator to secure it to the back of the TV.
7. Take the short adapter cable out of its plastic bag.
 8. Insert the little square piece at the end of the cable into the Apple, in the place you located earlier. Be sure it's the right way around, with the side with the four slotted holes facing the front of the Apple.
 9. Run the other end of the cable out through the rightmost (as you look at it from the keyboard) notch in the back of the Apple.
 10. There is a little clamp in the middle of your cable. Slide the clamp down the edge of the notch to secure the cable to the Apple case. Notice that your cable is looped through a ring (this is called a TOROID). This ring should be on the inside of the Apple.
- NOTE:** Both of these are measures that have been taken to reduce the amount of TV and radio interference (called RFI) that is generated by the Apple.
11. Carefully connect the Modulator cable from the TV to the end of the cable that is now sticking out of the back of the Apple. Be sure all the holes line up before you push too hard.





I nstalling the Hand Controllers

- 1.** Remove the styrofoam protector from the PIN CONNECTOR at the end of the cables.
- 2.** Look into the top of the Apple and once again locate the socket marked GAME I/O.
- 3.** Thread the cable through the second-to-the-rightmost notch in the back of the Apple — the one next to the notch you used for the Modulator cable.
- 4.** Slide the little u-shaped clamp on the cable down the edge of the notch to secure the cable to the Apple case.
If your Hand Controllers have no clamp, tie the cables in a knot and lay the cables in the notch with the knot inside the Apple. This will reduce tension on the connector.
- 5.** Plug the pin connector into the socket inside the Apple. Be very careful that the pins line up—you can damage the controllers and possibly the computer if they don't.

I nstalling the Disk Drive

There are three things to do to completely connect the disk drive to the computer: (1) secure the cable to the Apple case using metal plates, (2) attach the cable to the Disk Controller Card, and (3) install the Controller Card in the Apple.

Securing the Cable to the Apple Case

1. Take the clamp and screw out of their plastic bag. Notice that there's a small nut affixed to one side of the clamp.
2. Gently squeeze the two sides of the clamp together, using one hand.
3. With the other hand, thread the screw through the clamp from the side opposite the nut.
4. Give the screw a few turns until its end is flush with the nut.
5. Take a look at the grey, ribbon-like cable. Notice that it has a connector at the end and a flap with a metal tab on its side.
6. Thread the ribbon cable through the oval opening in the clamp—IN the screw side and OUT the nut side—until the flap is between the two sides of the clamp.
7. When the cable is correctly in place, the metal flap should fit snugly against the inside of the clamp, on the nut side.



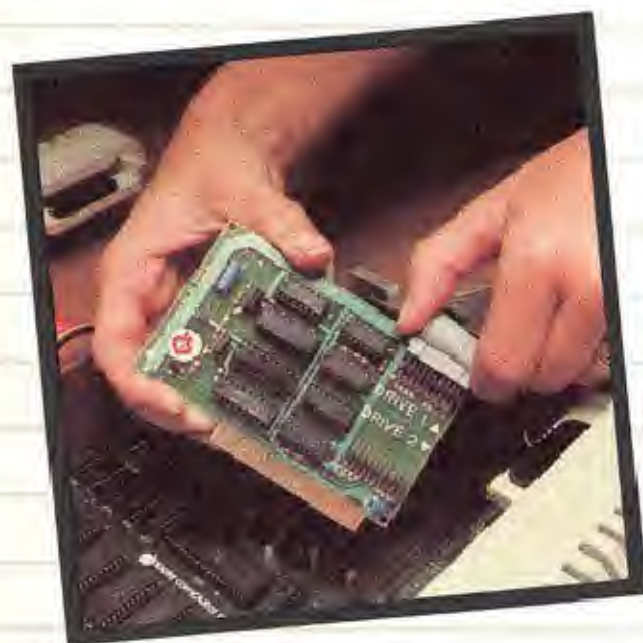


8. This cable is going to exit the Apple through the third-from-rightmost notch in the back of the Apple—next to the one you used for the hand controllers. Slide the clamp down over this notch, making sure that:

- The screw side is outside the Apple
- The screw end of the clamp goes in first, so the word TOP is visible on the top of the clamp
- The metal flap is on the inside of the Apple, flat up against the inside of the case and not sticking out from under the nut side of the clamp.

9. Push the clamp as far down into the notch as it will go, and tighten the clamp screw from the outside of the Apple.

ATTACHING THE RIBBON CABLE TO THE CONTROLLER CARD



1. Touch the power supply. This will discharge any static electricity you might have in your body.

2. Take the disk controller card out of its plastic bubble pack. Handle the card gently by its edges.

3. On the side where the components are mounted you will see two sets of pins labeled Drive 1 and Drive 2. The set labeled Drive 1 is the one to use.

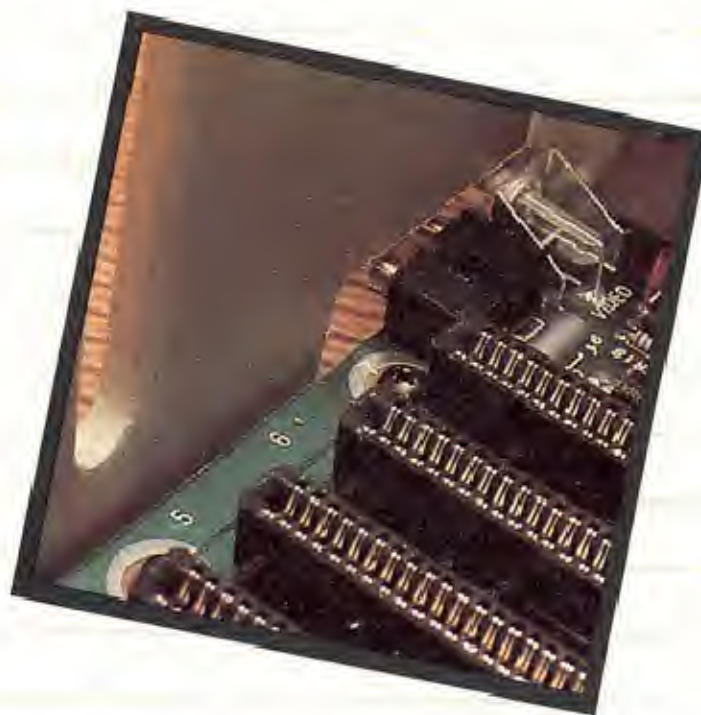
4. Examine the ends of the ribbon cable attached to the disk drive. Note that there are twenty tiny holes where a matching pin connector will fit.

5. Attach the drive to the controller card. Be sure all the pins end up in a hole—it's possible to put the connector together so you've missed the two end pins. Press the connectors firmly together and then look closely to insure that all pins are properly seated.

When the cable is plugged into the controller card correctly, the cable should exit from its connector on the side of the connector that is away from the controller card, as shown in the photograph.

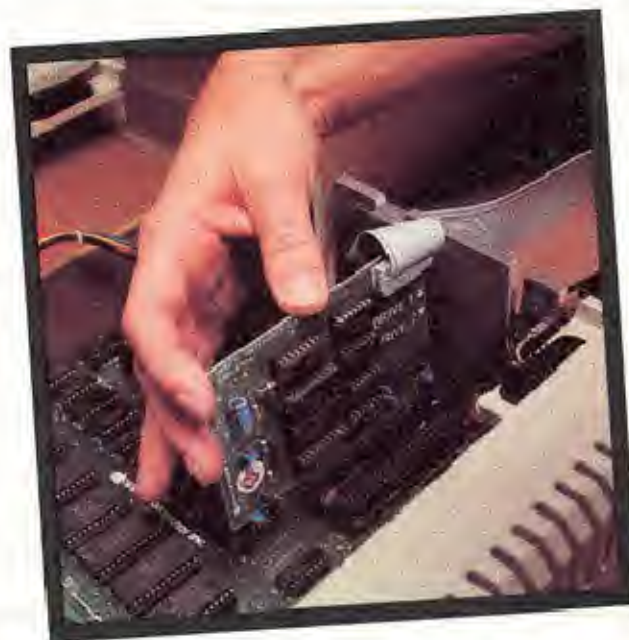
INSTALLING THE CONTROLLER CARD

1. Locate SLOT 6 among the seven slots located on the Main Logic Board of the Apple. Note that they're numbered in "Computerese"—that is, from 0-7 instead of from 1-8. (These numbers may be printed either at the top or the bottom of the slots)
2. Hold the card (carefully, by its edges) over slot 6, with the gold "fingers" pointing downward into the slot.
3. Put a thumb on the top edge of the card, rock it slightly to get it started, and then press down firmly until the card is fully inserted.



LABEL THE DISK DRIVE

1. Find the small metal self-adhesive decals that were packed in the bubble pack with the controller card.
2. Remove the paper backing and stick decal "DRIVE 1" on the face of your drive. As you can see, this corresponds to the "Drive 1" pin location on the controller card.





Setting the Reset Switch

The way your Apple operates right now, one false move can lose all your valuable work. If you accidentally press the RESET key, the Apple forgets everything it learned since the last startup. There is a way to safeguard against this: change a switch setting so you have to type CTRL-RESET when you mean RESET. We strongly recommend that you make this change:

Now when you press the RESET key without pressing the CTRL ("Control") key, the Apple will ignore you.

At Last!

Just one more page and you'll be up and running.

- 1.** Replace the cover.
 - Insert the front lip of the cover.
 - Press down on both sides of the rear—PRESS HARD, until you hear a snap on either side of the cover.
- 2.** Set the system up the way you want it. There is no absolute rule—the most popular configuration is to place the disk drive on top of the computer, with the TV placed conveniently beside it.
- 3.** Plug in the TV.
- 4.** Turn it to Channel 3 or 4.



Radio and Television Interference

The equipment described in this manual generates and uses radio frequency energy. If it is not installed and used properly, that is in strict accordance with our instructions, it may cause interference to radio and television reception.

This equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation.

You can determine whether your computer is causing interference by turning it off. If the interference stops, it was probably caused by the computer. If your computer does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Turn the TV or radio antenna until the interference stops.
- Move the computer to one side or the other of the TV or radio.
- Move the computer further away from the TV or radio.
- Plug the computer into an outlet that is on a different circuit from the TV or radio. (That is, make certain the computer and the TV or radio are on circuits controlled by different circuit breakers or fuses.)

If necessary, you should consult your dealer or an experienced radio/television technician for additional suggestions. You may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems."

This booklet is available from the U. S. Government Printing Office, Washington, DC 20402, Stock number 004-000-00345-4.



What Is All This?

I'd like to know a little bit about computers before turning it on. Read on.

I want to turn it on and see it work now! Turn To You Do It on Page 29.

What's A Computer?

This is a computer, one of the most exciting and important inventions in decades. It is a device of wire, silicon, and glass, for the purpose of following your instructions.

This little analogy may make it clearer.

Imagine what you do when you add a column of figures. With a pencil and paper you list the numbers to be added. Then you tell yourself to add the right-most column of numbers. You tell yourself to add the first number to the second, then add the third, until you reach the end of the list. Then you tell yourself to write down the right-most digit and carry the remainder. And so on.

A computer can be instructed to do almost anything you can tell yourself to do. It can be told to follow a series of instructions (called **COMMANDS**) and it can be told what to do if certain things happen. For example, it can be told, "If the total is larger than 500 then turn yourself off," or "If the total is less than 300 then type a note on the bottom of the form."

What kinds of things can it do? It can automatically balance checkbooks, calculate racing odds, help you keep a schedule, provide entertainment, and translate languages.

A computer can do so many complicated things that it often seems to be thinking for itself. But it doesn't, as you will soon find out when you forget to tell it to do something. If you don't tell it to print what you are typing on the screen or onto paper, it won't.



How Does It Work?

Think of the computer itself as a large, sophisticated switchboard. This switchboard is capable of accepting commands, of sending signals back and forth, and of storing a number of instructions in its "working memory."

The computer keyboard is the device through which you talk to the computer, giving it commands and answering the questions it has been instructed to ask you. The TV is one of the ways the computer communicates back to you. It shows you what the computer is doing or is about to do.

Think of the disk drive as an electronic library. It is a place to store information on a permanent basis; it is a place the computer can go to find the sequences of instructions it needs, and where the computer can be commanded to save (i. e. store) information for future use.

To make your computer work for you, you can either:

1. Type in a series of instructions and then tell the computer to execute them; or,
2. Insert a diskette into the disk drive that already has such a series of commands stored on it, and tell the computer to do as it's told, or,
3. Both of the above.

The computer will ask the disk what it should do, and then do it. It will do whatever the program says for it to do.

What's A Program?

Not everybody knows what a computer program is, even though they have heard the term several times before.

Simply said, a computer program is a list of instructions for the computer to carry out. Just as you might be asked to handle a list of instructions that read:

1. Write all these numbers,
2. Add the numbers,
3. Write the total.

The computer might be given a list of instructions that read:

10 PRINT "40"	Tells the computer to print the number 40 on the screen.
20 PRINT "10"	Tells the computer to print the number 10 on the screen.
30 PRINT "60"	Tells the computer to print the number 60 on the screen.
40 PRINT "—"	Tells the computer to print three dashes on the screen.
50 PRINT 40+10+60	Tells the computer to print on the screen the answer to the problem.
60 END	Tells the computer that this is the end of the program.
RUN	Tells the computer to execute the program in its memory.

Thus, the computer program is the list of instructions that tells the computer what to do. Some programs, or pieces of programs, are built right into the hardware; other programs are written into the computer by you. That's one of the things you will do with the keyboard: write programs that tell the computer to do the things you want it to do.

To do that, you need to be able to speak a language that the computer will understand.

how

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What's A Computer Language?

If you want to talk to another person you need to be able to speak a language the other person understands. You wouldn't communicate much if you spoke Swedish to a toad unless the toad spoke Swedish, too.

It's the same with computers. You have to speak a language they understand. If you don't they just sit there and say "Huuuh?" A computer language consists of a collection of words and symbols, just like a spoken language. Examples of words in a computer language might be PRINT, INPUT, SAVE, RUN, LOAD, FOR... NEXT, GO TO, and so on. In addition, there are special meanings for commas, semicolons and other characters you see on your keyboard.

Unlike a spoken language, however, each word or symbol in a computer language has a special and precise meaning, and each has to be "spoken" to the computer in precisely the correct order. Put a comma in the wrong place and the program won't work or will do something other than you want it to do.

There are several computer languages—that is, several collections of words and symbols that are used for instructing computers. Why? Different uses of the computer are best served by a language designed especially for that purpose. A language that is good for solving highly complex mathematical problems may not be the best one for carrying out bookkeeping procedures. But there's another reason why several languages exist. People who write programs are constantly experimenting, sometimes leading to the development of a new language...or a dialect of an old one.

program

Apples, for example, use one of two dialects of the popular BASIC language. Applesoft BASIC, a good language for you if you need decimals, is sometimes called Floating Point because the decimal point floats to wherever it is needed to accurately display the number. Integer BASIC rounds numbers, and isn't a suitable language if you are an accountant where every penny must be accounted for.

The main thing to remember is that a computer language is simply a collection of words and symbols used for communicating with the computer, that these words and symbols have special meanings, and that the words must be "spoken" (fed into the computer) in a precise order.

Just as spoken languages have names, such as French, English and Italian, computer languages have names such as BASIC, FORTRAN, and Pascal. You will be speaking to your computer in Applesoft BASIC; your Apple II Plus responds in the same language. Once you get the hang of it you'll be chatting like a couple of old friends.

Don't Know How to Program?

One of the questions you may be asking yourself is what do I do with the computer if I don't know how to program.

Using an Apple is like driving a car. You don't have to know how to build the car or exactly how it works inside in order to successfully learn how to drive it. The opportunity to learn how to build it is there if you want to do that but is not necessary to learning how to drive it.

In the manual we'll be showing you examples of both how to build the car (programming the computer) and how to drive the car (how to use programs someone else has written for you). Then it's up to you whether you become a driver, a builder, or both. Enjoy.



Apple Presents... Apple

1. Locate the diskette labeled APPLE PRESENTS...APPLE—the one that was packaged with this book. Take it out of its paper sleeve.
2. Open the drive door by putting your finger under the door and pulling out.
3. Gently slide the diskette into the drive, label side up.
4. Close the drive door.
5. Turn on the TV.
6. Turn on the Apple. You will hear about 20 seconds of whirring and clacking. See you back here in a little while!





Part 2

You Do It

Now What?

- I want to learn more about the basics of using the computer itself.
Read on.
- I want to learn about the different ways I can use my Apple.
Turn to page 59, AND NOW THE FUN BEGINS.
- I want to start using all these programs right now!
Set this book aside and start opening packages. You can use the individual diskettes just as you used "APPLE PRESENTS...APPLE." Be sure to read the individual instructions with each one.

We can understand your eagerness to get started with the programs; however, we do recommend that you eventually read all of this book.

Diskettes and Disk Drives

A disk drive is a box that can take information off a floppy disk (which we call a diskette) and send it to the computer, or receive information from the computer and record it on a diskette. Before you start handling diskettes, you need to know a little about them.

- Diskettes are round plastic disks sealed in black jackets. You can safely handle diskettes by any of the four corners of the jacket.
- Do not bend the diskette (let alone fold, staple or otherwise mutilate it).
- Avoid touching the exposed surface of the diskette through any of the holes in the paper jacket.
- Keep diskettes free from dust by keeping them in their paper sleeves and in their box.

■ Most important, keep diskettes away from magnetic fields. Information is stored on diskettes through a magnetic process, so other magnetic fields can erase or scramble the information stored.

Now, find the diskette labeled "DOS 3.3 System Master" – it was packaged with the disk drive in the square white box.

Take the "APPLE PRESENTS...APPLE" diskette out of the drive, and replace it with this diskette.

Close the drive door.

Turn the Apple off, then turn it on again.

A red lamp should light on the disk drive, and the POWER light on the keyboard should come on. You will hear whirring and clacking sounds coming from the drive. In a few seconds the sounds will stop and the red light will go out.

A heading will appear on the screen that looks something like this:



■ If NOT, check that the power cord is fully seated in its socket at the rear of the computer, and that you are actually getting power from the wall sockets.

■ If you still don't see anything on the screen, adjust the BRIGHTNESS and CONTRAST knobs on the monitor.

■ If you see slanted marks but no words, adjust the HORIZONTAL HOLD control.

■ Check to see that the video monitor cable is securely connected to the monitor and to the computer.

■ If you have a message that says `INSERT YOUR 13 SECTOR DISK AND RETURN` you have used the DOS 3.3 BASICS diskette. Turn off the computer, get the DOS 3.3 System Master diskette, and start again.

■ If the drive light doesn't go out and you do not hear scratching or clacking, only whirring sounds coming from the drive, the diskette is probably not fully inserted in the drive. Here's what to do:

Open and close the drive door firmly.

STILL NOTHING?

Turn the computer off, take the diskette out of the drive and re-insert it.

STILL NOTHING?

See the Error Message section under `I/O ERROR` for other remedies.

Booting the System

In computer jargon, what has just happened is called `BOOTING` the system. A lot just went on inside the computer and disk drive. As soon as the computer recognized it had power, it: (1) checked to see if a disk drive was connected to it; (2) checked to see if there was a diskette in the disk drive; (3) brought information from the diskette into the computer memory; and (4) printed the heading of the diskette on the video screen.

When the computer determined that everything was all right, it printed a `PROMPT` on the screen that looks like this: `]`. This prompt lets you know the computer is finished processing an instruction and is ready for another. At right of the prompt is a flashing square box: the `CURSOR`. The cursor tells you where any character you type will be put on the screen.

Explaining the Exercises

Each time we ask you to type something on the keyboard, we'll put the instructions in a box.

This is an example of what the instruction boxes will look like.

TYPE THIS...

YOU WILL TYPE EXACTLY WHAT
IS PRINTED IN THIS SPACE

THEN DO THIS...

THEN YOU WILL DO WHAT IT SAYS
IN THIS SPACE

WHAT'S HAPPENING?

The idea is for you to type exactly what it says in the top left portion of the box. Be particularly careful to copy the punctuation as shown. And don't add any punctuation that isn't shown.

Then do whatever it says to in the top right portion of the box. The bottom portion of the box will tell you something about what's going on.

When it's appropriate, we'll add another box that describes what you can expect to see or hear as a result of what you've done, like this...

TYPE THIS...

THEN DO THIS...

WHAT'S HAPPENING?

WHAT YOU SHOULD SEE OR HEAR...

A Adjusting the Picture

You did some picture adjustments while you were using the "Apple presents ... Apple" diskette. This section will teach you a little about computer programming and help you fine tune some more.

First, fill the screen with words so you can adjust the picture. It doesn't matter what the words say. We just want the screen full. Let's make the computer do most of the work. You give the computer a short message and ask the computer to repeat it to fill the screen.

TYPE THIS...

NEW

10 INVERSE

**20 PRINT "THE QUICK BROWN
FOX JUMPED"**

30 GO TO 20

RUN

THEN DO THIS...

Press the **RETURN** key

Press the **RETURN** key

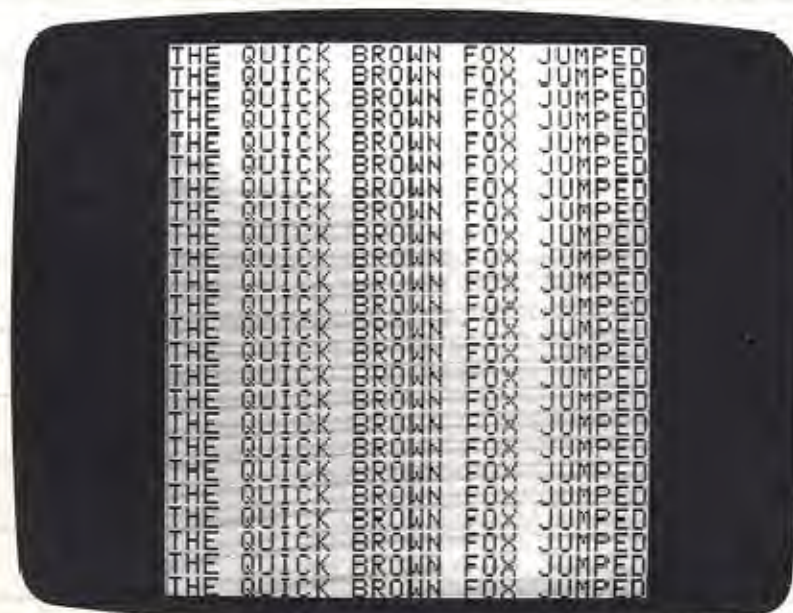
Press the **RETURN** key

Press the **RETURN** key

Press the **RETURN** key

WHAT YOU SHOULD SEE OR HEAR...

You should now see a screen full of your message, fluttering.



WHAT'S HAPPENING?

You have just written your first computer program. Easy, wasn't it? The command NEW cleared the computer's memory of any previous program.

Each line of the program instruction must begin with a number; 10, 20 and 30 are the line numbers of the program you wrote.

With the command INVERSE you told the computer to print black letters on a white background. The command PRINT told the computer to print the message between the quotation marks onto the screen. GO TO 20 told the computer to go back to line 20 and follow that instruction again. The command RUN (without a line number) told the computer to execute your program.

TYPE THIS...

THEN DO THIS...

Press and hold the **CTRL** key down, then type **C**

WHAT'S HAPPENING?

The fluttering stopped. **CTRL-C** cancels a running program.

WHAT YOU SHOULD SEE OR HEAR...

A beep from the computer; the words Break In (a number); a prompt and a cursor.

There are four controls for adjusting your TV picture. All four controls are usually on the front of the TV. Make adjustments in the following order (if the picture suits you without further adjustment, go to Step 6 below):

STEP 1 – If your picture is rolling,
Adjust the VERTICAL HOLD up or down...

OR

If your picture is slanted or the typing isn't centered,
Adjust the HORIZONTAL HOLD.

STEP 2 – Turn the CONTRAST control down to the lowest level that allows you to see characters on the screen.

STEP 3 – Adjust the BRIGHTNESS control to about mid-range (turn it all the way clockwise and then counterclockwise; set it about halfway).

STEP 4 – Increase the contrast by turning the control clockwise until all letters are distinct and easy to read. Reduce the contrast if anything is smeared.

STEP 5 – Increase the brightness to suit yourself.

STEP 6 – When you have the picture adjusted just the way you want it:

TYPE THIS...**THEN DO THIS...****HOME**Press **RETURN****NEW**Press **RETURN****NORMAL**Press **RETURN****WHAT'S HAPPENING?**

The HOME command will clear the screen and put the cursor at the top left hand corner.

The command NEW clears the computer's memory of any previous program. The command NORMAL clears the INVERSE command.

Calling Up the Catalog

As each program (or "file" as it is sometimes called) is stored on the diskette, it is given a name, and that name is stored in a special place – the "catalog" – and it's like an Index or Table of Contents. Here's how to get it onto your screen so you can see it.

TYPE THIS...**THEN DO THIS...****CATALOG**Press the **RETURN** key**WHAT YOU SHOULD SEE OR HEAR...**

After a second or two, the catalog should appear on the screen.



WHAT'S HAPPENING?

You have commanded the computer to display the diskette's contents (the catalog) on the screen.

QUESTION: Are you seeing the entire catalog? What if the catalog is too long to fit on the screen?

Take a look at the square cursor at the bottom left margin on the screen.

If there is a prompt (I) to the left of the square cursor, you are looking at the entire catalog and the computer is ready for your next command.

If there is no prompt to the left of the cursor, press any key to see the rest of the catalog (we suggest the space bar because it's biggest and closest).



Because we know what the catalog of the System Master diskette looks like, we know you had to press a key. When you did, the screen scrolled up to make room for the rest of the catalog; the RETRIEVE TEXT file is the last entry. Then you saw the prompt and the cursor appear, telling you the computer is waiting for the next command. If you want to see the top portion of the CATALOG again, type the command CATALOG and press RETURN.

Right now you might be wondering how to read the four columns of the catalog, so here's the explanation:

Your CATALOG should resemble this but may not be exactly the same.

DISK VOLUME 254

* A	006	HELLO
* I	018	ANIMALS
* T	003	APPLE PROMS
* I	006	APPLESOFT
* I	026	APPLEVISION
* I	017	BIORHYTHM
* B	010	BOOT 13
* A	006	BRIAN'S THEME
* B	003	CHAIN
* I	009	COLOR DEMO
* A	009	COLOR DEMOSOFT
* I	009	COPY
* B	003	COPY-OBJØ
* A	009	COPYA
* A	010	EXEC DEMO
* B	020	FID
* B	050	FPBASIC
* B	050	INTBASIC
* A	028	LITTLE BRICK OUT
* A	003	MAKE TEXT
* B	009	MASTER CREATE
* B	027	MUFFIN
* A	051	PHONE LIST
* A	010	RANDOM
* A	013	RENUMBER
* A	039	RENUMBER INSTRUCTIONS
* A	003	RETRIEVE TEXT

The name of the file or program
 The amount of space (in sectors)
 that the program takes up on the
 diskette.

The language the program is
written in (file type):

A=Applesoft BASIC I=Integer BASIC

B=Binary T=Text

The program is or is not locked.
 Locking a file protects it from
 changes or erasures.

Asterisk=locked

No asterisk=unlocked

If you were to try to call up a catalog title prefixed by an "I" your computer would respond with an error message. This is because "I" files are written in Integer BASIC and the Apple II Plus does not understand that language – it uses Applesoft BASIC. (There is a special card you can purchase which allows the Apple II Plus to understand Integer BASIC, but we won't be discussing that here.) Specifically the error message would read LANGUAGE NOT AVAILABLE.

Running a Program

With the catalog on the screen in front of you, you can call up any title. Let's call up LITTLE BRICK OUT as an example.

TYPE THIS...

THEN DO THIS...

RUN LITTLE BRICK OUT

Press the **RETURN** key

WHAT YOU SHOULD SEE OR HEAR...

After a few seconds, the game will begin. As part of its introduction, you will be asked some questions. Remember to press the RETURN key after each response.

WHAT'S HAPPENING?

Using the command "RUN" and the title "LITTLE BRICK OUT," you have told the computer to find and run the game titled LITTLE BRICK OUT.

GO AHEAD AND PLAY THE GAME FOR A LITTLE WHILE. YOU DESERVE A REST.

Let Me Out

Suppose you want to stop a program. Usually the program will offer you that option from time to time, and even tell you how to do it. LITTLE BRICK OUT gave you instructions. Did you see them?

But suppose you wanted out of a program at a time other than when it was offered. There are at least 7 possible ways to exit a program. Try all 7 ways, using LITTLE BRICK OUT to practice on. We know that all 7 will work on this program, but each program is unique and the suggestions we provide won't work in every case.

You'll know you have successfully gotten out of a program when you see the prompt on your screen. To re-start LITTLE BRICK OUT after a successful exit, type RUN to re-enter the game. You don't need to say what to run because LITTLE BRICK OUT is still in the computer's memory even though it's not running anymore. Answer all the questions and get to the game board before trying it out.

1. ESC This key on your keyboard is located in the upper left hand corner. Its full name is ESCAPE.

2. CTRL-C CTRL is a key on your keyboard located under the ESC key. Its full name is CONTROL. Whenever you use the CTRL key you will hold it down and while it's held down you will type the character key indicated after the hyphen. You do not need to press the -key. The hyphen is just our way of reminding you to press and hold the CTRL key while pressing another key. CTRL-C stands for CANCEL.

3. CTRL-C RETURN This is a variation on CTRL-C.

4. ESC CTRL-C This is another variation of 1 and 2 above. Escape from the program and then Cancel the program.

5. RESET (upper right hand corner). The RESET key abruptly stops whatever is going on and resets the computer to its original state. Because of its abruptness you will want to use RESET sparingly. Using the RESET key is getting a little drastic.

6. CTRL-RESET Some Apple keyboards have been set up to ensure that you really want to RESET the computer. These keyboards will require that you press and hold the CTRL key while pressing RESET.

7. TURN OFF THE POWER You will rarely have to go this far to exit a program. But sometimes the computer will get so involved in what it is doing that the only way to get its attention is to turn it OFF.

Copying Diskettes

Why would I want to do this, you say... Well, even though diskettes last a long time, they will eventually wear out. And if a program you have stored on a diskette is important to you, you will want to have a copy on another diskette for the same reason you would make a photo copy of an important paper document – just in case you get careless and lose or damage the original.

There are only three more things to know about diskettes before you can begin copying the contents of one diskette onto another.

Write-Protected Diskettes

First, some diskettes have a small notch on the right side, and others do not. The contents of notched diskettes can be modified, added to or erased. Diskettes without the notch are “write-protected” – they cannot be modified.

Some program diskettes you buy may be “copy-protected” – that is, they’ve been designed so you can’t copy them. Any diskette that is not copy-protected can be copied onto any diskette that is not write-protected.

Labeling Diskettes

Second, you will want to label each diskette with a title to indicate what is on it. When you write on the diskette label, use a fiber tip pen and a very light touch. If you use a pencil, a ballpoint pen, or if you press hard, you may damage the diskette.

Protecting Diskettes from Erasure

Finally, to protect your copy from accidental rerecording, tape the little self-adhesive tabs found in the diskette box over the notch, and the diskette will be protected.

Having said all that, let’s copy a diskette. Obviously, there will be two diskettes involved. The one that contains the information to be copied is called the original diskette. The one onto which the information will be copied is called the duplicate diskette.

Running the Copy Program

The program that will control the copying is on your DOS 3.3 System Master Diskette. Put this diskette in Drive 1 if it isn’t already there. Boot the diskette.

There are two ways to boot a diskette.

A. Turn the power off, wait a couple of seconds, and turn the power on again. This is called a COLD BOOT.

B. If the computer is already on and there is a prompt on the screen, type PR#6 and press RETURN. This is called a WARM BOOT.

C. Call up the CATALOG (page 28 if you need assistance). You will see two copy programs listed in the CATALOG. One, COPY, has an "I" as a file type. This copy program is for Apples that speak Integer BASIC. Your Apple II Plus speaks Applesoft. Look further down the catalog and you will see a program named COPYA. This is the one you want. It is written in Applesoft BASIC.

TYPE THIS...

RUN COPYA

THEN DO THIS...

Press **RETURN**

WHAT'S HAPPENING?

The copying program is being loaded into the computer's memory.

WHAT YOU SHOULD SEE OR HEAR...

The computer will ask you five questions, one at a time. Read on.

- 1.** When the copy program is in place, it will ask you to give the slot where it will find the disk controller card. DEFAULT 6 means that unless you tell the computer otherwise, it will assume the disk controller card is in slot 6. Well, it is in slot 6, so all you do is press the RETURN key.
- 2.** Now the program will ask you which drive the original diskette will be placed in, and it says "DEFAULT 1." This means that unless you say otherwise, the computer will assume that the original diskette will be in Drive 1. It is. Just press the RETURN key.
- 3.** Now the computer is asking questions about the duplicate diskette, the one you will be copying onto. It will again assume slot 6, which is correct, so press the RETURN key.
- 4.** The computer will assume that the destination diskette will be in Drive 2, even if you don't have two drives connected. Since you have one drive, change the default duplicate drive number from 2 to 1 by pressing the 1 key.



5. At this point you're ready to go. The computer is asking you to press the RETURN key to begin the COPY.

From now until the end of the copy program you will be following the instructions on your screen. Keep on doing as it asks you to; it will tell you exactly what to do to complete the copying. You will need to make several diskette changes to complete the copy. Only so much information can be transferred from the diskette into the computer's memory. When the memory cannot hold any more, the computer will ask you to put in the duplicate diskette. It will then transfer all the information from the memory onto the new diskette. Then it will ask you to put the original diskette into the drive so it can get more information to transfer. It will continue going back and forth until it has picked up all the information from the original diskette and copied it onto the duplicate diskette.

When it's all done, a message will come on the screen asking "DO YOU WISH TO MAKE ANOTHER COPY Y/N?"

6. Press N for no. The prompt will appear on the screen indicating you have exited the copy program and now have control of the computer again.

After you make a copy of any diskette, it is always a good idea to test the new diskette. To do this, put the duplicated diskette in drive 1 and boot it. (See page 32 for booting instructions if you need assistance.)

All Diskettes Are Not Created Equal

When a diskette is manufactured it is completely blank. Computers like to store information in nice, neat boxes, or “tracks” and “sectors” as we call them. Each computer has a different way of arranging the information on the diskette. When you ran the COPYA program, the Apple formatted the diskette before it copied the files from one diskette to the other. This process of formatting a diskette is called initialization (or INIT for short).

Your Apple formats the diskette in 35 tracks with 16 sectors per track. Earlier models of Apples formatted diskettes in 35 tracks with 13 sectors per track. This change was made to allow more information to be stored on each diskette.

There are several ways to INIT a diskette: one is to run the COPYA program; another is to let the program you’re using INIT diskettes for you; a third is to use the INIT command by itself. The next section will teach you how to INIT a diskette.

How Will I Know Whether a Diskette is 13 or 16 Sector?

Sometimes you will come across a diskette that is not properly labeled – nowhere can you find whether it’s 13 or 16 sector. Here are a few ways of figuring it out:

- Read the materials packaged with the diskette. They may say something like:

“You will need DOS 3.2”

(This is 13-sector)

or

“You will need DOS 3.3”

(This is 16-sector)

The numbers 3.2 and 3.3 indicate Version Numbers of DOS.

- If all else fails, there’s one sure way of finding out – Boot it.


If all you hear from the drive is whirring and whirring and whirring and...you can be pretty sure this is a 13-sector diskette.

What To Do When A Program Diskette is 13 Sector

All the existing program diskettes can be used on your Apple, whether they be 13 or 16 sector. Included in the box with the System Master diskette is another diskette labeled DOS 3.3 BASICS. This diskette makes your 16 sector disk drive think it is a 13 sector disk drive (and therefore capable of using a 13 sector diskette).

All you have to do is this:

1. Boot the DOS 3.3 BASICS diskette (NOT the System Master)
 2. A message will appear on the screen that says:
-



INSERT YOUR 13-SECTOR DISKETTE
AND PRESS RETURN

3. Remove the BASICS diskette from the drive
4. Insert any 13 sector diskette and press RETURN

The diskette program will load into memory and you're off and running.

But This Could Get To Be A Pain In The Neck

It is important to remember that whenever you re-boot, or turn the power off, you must boot the BASICS diskette again. This can become tedious if your very favorite program is 13 sector. So after you're a bit more comfortable with your Apple, you might want to read the section in your DOS Manual about a file called MUFFIN.

Muffin is a program that, in some cases, can take a program from a 13 sector diskette and transfer it to a 16 sector diskette. Muffin won't always work because some programs are "protected" from copying or alteration.

I nitializing a Diskette

In the previous section you copied the entire contents of one diskette to another. It will be far more common for you to copy selected programs from one diskette onto another. Before using a new diskette, however, it must be formatted or "initialized" (INIT for short) so the new diskette will know the rules by which it will operate. That way, it can tell you how much of the diskette has been used, and what programs are stored on it.

It's really very simple to do.

If your system has been turned off start at number 1 below. If you already have the DOS 3.3 System Master booted into your computer go to 3.

1. Place your DOS 3.3 Master diskette in Drive 1.
2. Boot the diskette either by using the "warm start" boot (PR#6 RETURN) or the "cold start" boot (turning the computer off and on again).
3. When the prompt appears on the screen place a new diskette in drive 1. (You can use the diskette you copied onto in the last exercise if you don't have another blank diskette).

TYPE THIS...

INIT HELLO

THEN DO THIS...

Press the **RETURN** key

WHAT'S HAPPENING?

You have commanded the computer to initialize the diskette and give it the same heading that's on the System Master diskette.

WHAT YOU SHOULD SEE OR HEAR...

The disk drive will run for awhile. When initializing is complete, the flashing cursor will reappear, and the red light on the disk drive will go out.

You will always want to confirm that the blank diskette is really initialized by booting the diskette. The heading and prompt will appear on the screen.

4. Now call up the CATALOG. The only entry will be HELLO (the title of the heading). The amount of space that the heading is taking up on the diskette will be shown.

Initializing With Your Own Title

You may want to initialize a diskette under a more descriptive heading, that you make up yourself. No problem.

We will use the same diskette again if you want because every time you INIT or COPY onto a diskette you erase all of the previous information. Diskettes can be INITed or Copied over and over if necessary. So don't worry about using up your only diskette.

1. Place the DOS System Master in drive 1 and boot the diskette if you have not already done so. When the heading appears on the screen, remove the System Master from the drive.

2. Place a new diskette or the old diskette from the previous exercises in drive 1. Then follow this sequence.

TYPE THIS...

THEN DO THIS...

NEW

Press the **RETURN** key

**5 REM GREETING-1
PROGRAM**

Press the **RETURN** key

**10 PRINT "SLAVE DISKETTE
CREATED ON A 48K SYSTEM"**

Press the **RETURN** key

**20 PRINT "BY (YOUR NAME)
ON (DATE)"**

Press the **RETURN** key

30 END

Press the **RETURN** key

INIT HELLO

Press the **RETURN** key

What You Should See or Hear...

The disk drive will run for a while. When initializing is complete, the flashing cursor will appear and the red light on the disk drive will go out.

Confirm that the blank diskette is really initialized by booting it. Of course, the heading on the screen will be the one you composed.



Initializing With a Program

There's a third way to initialize a diskette which omits use of a heading but puts you straight into the program. Why don't you try it just to see how it works.

1. Place your DOS 3.3 System Master diskette in drive 1. Boot the diskette and call up the CATALOG. Then follow this sequence:

TYPE THIS...

LOAD LITTLE BRICK OUT

WHAT'S HAPPENING?

You have commanded the computer to transfer a copy of LITTLE BRICK OUT to its memory.

THEN DO THIS...

Press the **RETURN** key

3. Wait for the flashing cursor to reappear, indicating that the game is loaded into memory. Then remove the System Master diskette and place a diskette in disk drive 1.

4. And to continue...

TYPE THIS ...**THEN DO THIS ...****INIT LITTLE BRICK OUT**Press the **RETURN** key**WHAT'S HAPPENING?**

The system is "initializing" the diskette and transferring it to a program under the title LITTLE BRICK OUT.

WHAT YOU SHOULD SEE OR HEAR...

The "in use" light on the disk drive will be on for a minute or two. You'll know the process is complete when the light goes out and the flashing cursor reappears on the screen.

To confirm that everything's working, boot the new diskette. The game should automatically begin.

Error Messages

Sometimes the computer will tell you that it is unable to do what you have commanded or that it does not understand your command. When a misunderstanding occurs, the computer will usually beep to get your attention, then put a message on the screen telling you the nature of the problem. The errors you are most likely to encounter are explained here.

How to Fix a Typing Error...

Are the words ?SYNTAX ERROR on the screen?

NO Backspace the cursor using the left arrow key. When the cursor is over the character in error (or over the leftmost error if you made several), retype the line correctly over the previous letters. Then press RETURN key.

YES If there is a number after ?SYNTAX ERROR, that is the number of the line the computer cannot read. Type the instruction LIST followed by the line number which appeared after the error message, then press RETURN.

If there is no number after ?SYNTAX ERROR, look at the last line you typed.

In either case, look for spelling or punctuation errors. Once you identify the error, retype the line correctly and press RETURN.

?Syntax Error

This error message appears (question mark and all) whenever you have misspelled a command, misused a symbol when trying to enter a command, or used a command that the computer language doesn't understand.

This is a common error when you're first learning to use a keyboard, especially if you try to use the letter L for the number one.

Another common error is trying to punctuate a computer command like a sentence. If you use a period in your command accidentally, you will get a syntax error. Periods, like other characters, have very precise meanings, and they must be used correctly.

What to Do:

1. Retype the line.
2. Press RETURN (to enter the command.)

Once the computer types ?SYNTAX ERROR on the screen, it ignores the line that has the error in it, and is ready to start again. Try to ignore the fact that the error still shows. The screen is like a sheet of scratch paper on which the computer keeps a running track of what you and it are doing. The machine will later discard anything on the screen that you do not eventually tell it to SAVE.

File Not Found

This error occurs when you try to RUN a program. You have typed RUN, followed by the name of the program you want to run, and then pressed RETURN.

The computer responded with FILE NOT FOUND. This error message tells you that the computer tried to match the name of the program (file) you typed with those stored on the diskette, and couldn't find an exact match.

Why? Because:

- a. The program is not on the diskette or
- b. You misspelled the name of the program.

What to Do:

1. Check the spelling of your program. If it is incorrect, or if you used the wrong name for the program:
 - a. Retype the line correctly, including the command RUN, and
 - b. Press RETURN
2. If you have typed the name correctly and it still says the file cannot be found, type CATALOG to see if that file is really stored on that diskette.

File Type Mismatch

This error occurs when you try to RUN a program. You have typed RUN followed by the name of the file you want to run, and then pressed RETURN.

The computer responded with FILE TYPE MISMATCH. This error message tells you that the command you used (RUN) is not a command that the language the file is written in recognizes.

If you call up the CATALOG to your screen you will note that programs on your diskette are written in four different file types, named file types A, I, B, and occasionally T. RUN is a command recognized only by file types A and I. (Applesoft BASIC and Integer BASIC.)

What to Do:

1. Type CATALOG and press RETURN.
2. Check to see that the program you are trying to RUN is of file type A. (Your Apple II Plus only speaks Applesoft BASIC).
3. If it is, retype the command and press RETURN.
 - a. If it is a B file, type BRUN and the name of the file, or
 - b. If it is an I file you will need to get an Integer BASIC firmware card or a Language System card to install inside the Apple. These cards will make it possible for you to run Integer BASIC on your computer.

I/O Error

Next to ?SYNTAX ERROR the I/O error is the most common message you will see. It occurs when there is a problem in communication between the Apple and the disk drive or other peripherals like a printer.

It Could Be That:	If So...
You forgot to insert the diskette.	Put the diskette in the drive.
You forgot to close the disk drive door.	Close the door.
The diskette is not securely placed in the drive.	Gently rock the diskette from side to side, or take it out and put it in again.
The diskette is faulty or damaged.	Try a different one.
There was a glitch in signal transmission when you booted the system.	Reboot.
Cables are loose.	Reseat the cables in their sockets.
The formatting (INIT) is faulty or not there.	Re-Init the diskette. Remember when you INIT you will erase everything on the diskette (see page 192 of the DOS Manual).

Program Too Large

This error message tells you that the working memory doesn't have enough room (capacity) to hold the program you called up. This is usually because you already have one or more programs stored in the working memory (technically known as the RAM... Random Access Memory). When the computer compared the size of the program you are trying to call up with the size of the available memory, it noted a mismatch.

What To Do...

1. Type NEW and press RETURN. This will empty the RAM memory (working memory) and make it available for the program you want to use.

Language Not Available

This error message tells you that the language in which the program is written is not the same as the language(s) currently available to the computer. It is as though the computer understands French and German, but the program you are trying to RUN is written in Spanish. You have most likely tried to RUN a program with a file type I (program written in Integer BASIC when your Apple II Plus only understands programs written in file type A Applesoft BASIC).

To RUN this program you will need to get an appropriate language card and install it in your computer.

File Locked

This error message occurs when you try to modify a program already stored on your diskette. It tells you that you can't tinker with the file until it is "unlocked."

This is a nice feature, as it prevents accidental tampering or erasure of a program you dearly want to save. Imagine your chagrin if you suddenly discover that half your favorite game is missing.

The CATALOG listing is preceded by an asterisk(*).

* A 002 HELLO

* A 015 LITTLE BRICK OUT

TYPE THIS...

THEN DO THIS...

UNLOCK LITTLE BRICK OUT

Press RETURN

WHAT'S HAPPENING?

The program Little Brick Out has been unlocked. The asterisk (*) has been removed from the CATALOG listing.

You could now change or delete the program Little Brick Out.

WHAT YOU SHOULD SEE OR HEAR...

If you were to CATALOG the diskette, there would not be an asterisk beside the program Little Brick Out.

To LOCK Little Brick Out

TYPE THIS...

THEN DO THIS...

LOCK LITTLE BRICK OUT

Press RETURN

Glossary

APPLESOFT BASIC

A computer language for the Apple II Plus.

BOOT

(See Warm or Cold Boot)

CARD

A general term for a printed circuit board with electronic components attached. Also called an Interface Card, a Board, a Circuit Card Assembly, and other similar names.

CATALOG

A command that tells the computer to go to the diskette and find the Diskette Table of Contents.

COLD BOOT

A term given to restarting the system when the power is off.

COPYA

An Applesoft BASIC program on the DOS System Master Diskette that allows you to copy information from one diskette to another.

CURSOR

A square flashing box on the screen where entered type appears.

DISK CONTROLLER CARD

The printed circuit card connected to the Disk Drives in computer Slot 6 to establish communication between the computer and the disk drives.

DISK DRIVE	A rectangular box connected to the computer that reads and writes to diskettes.
DISKETTE	The square record-like objects for storing information from the computer.
DOS	Pronounced "DOSS," an acronym for Disk Operating System. This is a set of instructions for talking to the diskette or disk drive.
HOME	A command that tells the computer to clear the video screen.
INIT	A command to the computer that tells it to format or initialize a diskette so it can store information from the computer.
INVERSE	A command to the computer that tells it to display the characters on the screen in black characters on white background instead of the normal display of white characters on a black background.
LANGUAGE	A computer language is a code that the computer understands. The computer understands the code and performs the desired actions.
LOAD	A command that tells the computer to get a program or file from the diskette and bring it into the computer memory.
LOCK	A command to the computer that tells it to lock a program. Locking prevents changing or deleting a program on the diskette.

MAIN LOGIC BOARD	The large printed circuit board at the bottom of the computer.
MOTHER BOARD	Another name for the Main Logic Board.
NEW	A command to clear out the computer memory to make room for another program.
PR#6	A command to warm boot the diskette.
PRINT	A command to the computer that either tells it to print on the screen what is between quotation marks or to print on the screen the results of a problem.
PRINTED CIRCUIT BOARD	A sheet of fiberglass or epoxy onto which a thin layer of metal has been applied, then etched away to form traces. Electronic components can then be attached to the board with molten solder, and they can exchange electronic signals via the etched traces on the board. Small printed circuit boards are often called "cards," especially if they are meant to connect with edge connectors.
PROGRAM	A set of instructions written in a computer language to tell the computer what to do and when to do it.
PROMPT	A left facing square parenthesis on the screen that indicates the computer is ready to receive commands.

RUN	A command that tells the computer to follow the program instructions.
SCROLL	A term given to rolling up information on the screen to make room for the information below.
UNLOCK	A command to the computer that tells it to unlock a program so it can be changed or deleted from the diskette.
WARM BOOT	A term given to restarting the system when the power is already on.
WRITE-PROTECTED	Diskettes which have been protected from having information stored on them, altered, or deleted. This is accomplished either by covering up the notch in the first place, as on the DOS 3.3 System Master Diskette.

If you don't find the definition you want in this glossary, try the one in the back of your Apple II Reference Manual.



Part 3

And Now The Fun Begins



Apple Bran Muffins
SERVES 24

1/2 c. whole wheat flour	1/2 c. raisins
1/2 c. wheat bran	1/2 c. chopped nuts
1 tsp. salt	juice of 1 orange
1 tsp. baking soda	2 c. buttermilk
1/2 c. butter	1/2 c. molasses
1/2 c. grated orange rind	2 Tbsp. oil
1/2 c. chopped apple	



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Record

Keeping:

In Computerease It's "Data Base Management"

How do you organize information? Do you have a filing cabinet? How about a recipe file? What about the business cards you've collected from clients and suppliers? And how much information do you try to keep current in your head?

With your Apple, there are ways to put all these pieces of information together so you can work with them. The pieces are your DATA; you put them together to form a BASE; working with this base of data—well, that's MANAGEMENT: DATA BASE MANAGEMENT.

Take, for instance, the back issues of the magazines and professional journals you read. This collection might consist of neat stacks in the closet, a few in your desk at work, and several scattered around the house. You want to find that article you read last summer on, say, solar heating for the home (let's see... would that have been the May issue, or was it August...). You have to wander through the stacks, root around in your file drawers, maybe interrogate the family before you find it.

Now. Pretend you have a Data Base on your Apple. You've arranged your collection by name and month of issue, and have put in the table of contents for each magazine. If you can't remember which magazine the solar article appeared in, you can look at a list of all the magazines you got in June, or you can ask the Apple to SCAN all the tables of contents for the word "solar." The scan might even turn up some other articles on solar heating that you'd missed or forgotten.



Consider the possibilities. Your address book. Your stamp collection. Your favorite recipes. Your best jokes. Anything you've got that you want to keep track of. That's Data Base Management.

The world is full of data bases. Banks use data bases to keep track of accounts and transactions. Brokers and analysts depend on data bases to capitalize on market opportunities and to maintain client portfolios. Insurance brokers use them to keep track of customers. They're everywhere. Because the heart of a data base management system is a simple but fundamental service: storing information for use in different ways—faster, more efficiently, and more accurately than ever before.

But how much trouble is it to get all your information INTO the Apple? Well, it's not really as much trouble as you'd imagine—in fact, it's kind of fun. You don't have to do everything in one sitting. Whatever portion you've entered, you can use right away. And once it's done, it's done for good.

PFS: The Personal Filing System

PFS: The Personal Filing System,™ from Software Publishing Corp., is the part of The Family System you'll use to set up your own data bases.

You do this by creating FILES. A computer file is something like a collection of manila folders in a filing cabinet.

Within each file are a number of RECORDS. A record is like a form in one of those manila folders.

And each record is made up of a number of FIELDS. Fields are like the blanks on the form.

First of all, you must decide what form you want your records to take. You can follow sample forms provided with the program, or you can design your own.

Here are just a few ways you can design forms:

- Phone Messages
- Recipes
- Staff File

Once you've designed the form, you can recall it to the screen, fill in the information, and store the completed form on the diskette.

DATE: TIME:

TO:

CALLER:

OFF:

PHONE:

MESSAGE:

TAKEN BY:

FILE MESSAGE FORM 1 PAGE 1

And once you have the data stored on the diskette, you can retrieve it in any number of ways. For instance: You're checking phone messages. You might ask the Apple to "find all the messages for Louisa May Alcott," or "find phone messages between 9:00 am and noon."

Or you're looking for recipes, and you have the Apple "find all recipes with buttermilk somewhere in the ingredients."

FROM THE KITCHEN OF:

OVEN: TIME: SERVES:

NAME:

INGREDIENTS:

DIRECTIONS:

FILE RECIPE FORM 1 PAGE 1

Or you're on the lookout for additional sales help in your business. The Apple could review personnel files to "find applicants with five years' experience and salary requirements of \$20,000–\$25,000."

What you and the Apple are doing is called **SEARCHING** the files.

It's important to think about the ways you'll be using the information as you're designing the form. The PFS program always begins searching at the beginning (that is, the first record) of the file. So it's a good idea to name one of your fields "Record Number." Why? Back to the example of the magazine article.

You have a data base on your Apple. You have subscriptions to 10 different magazines, and your records include information from the last two years. That's 240 records. You know the solar heating article appeared within the last six months—you don't want to search through the whole file. So you tell the Apple to find all magazine articles with the word "solar" in the title **WITH RECORD NUMBERS GREATER THAN 180**. This will make your search faster, since the Apple doesn't have to bother checking the earlier records.

You can add to your files anytime you like. Change the contents of any of the fields. Create new files. Delete old records. With PFS, your Apple is your filing cabinet.

Where Do I Go From Here?

If you do a lot of record-keeping, you may find your present filing cabinet too small. Or you may need a data base program that can do more complicated things. If you own a small business, for instance, you might want to "find all customers whose last name starts with 'A' and who have made purchases in the last 8 months, and list out their names and addresses in zip code order."

This kind of function is called a **SORT**. Sorting means finding selected records and putting them in a particular order. There are programs for your Apple—such as **DB Master™** from Stoneware—that can provide you with this and many other capabilities. Ask your dealer for a demonstration.

And once your customers are sorted, perhaps you'll want to print mailing labels for them. You can read about the different types of printers in the section on Text Editing, pages 73–75. And PFS has a companion product, called **PFS Report Generator™**. Use it to make printed material come out in whatever format you choose—rows and columns, mailing label format, double spaced.... however you want it to look.

A Larger Library of Data

You can also use other people's data bases with your Apple. Using your telephone as a link, you can look into library catalogs, read the daily newspaper, or peruse abstracts of scientific papers...and that's only the beginning. Read about Telecommunications, on pages 81–83, to learn more about data bases you can tap with your Apple.

EMPLOYEE #	HIRED		
NAME			
ADDRESS			
CITY	STATE	ZIP	
JOB TITLE			
SALARY			

FILE STAFF	FORM 1	PAGE 1	

ALL STREET JOURNAL

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Labour

A Special New
And Their
Fields

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the news around. There are a lot of strange rumors, especially Robert K. Brown, the 40-year-old former Green Beret who is the founder, editor and publisher of the monthly *Black Panther*.

Asset Management With Apple

*"O Money, money, money, I am not necessarily
One of those who think thee holy,
But I often stop to wonder how thou canst go
out so fast
When thou comest in so slowly."*

Ogden Nash

I see the dragon in the mailbox whenever the bank statement arrives. Balancing the checkbook is, for me, a reminder that 1) the demand always seems to exceed the supply; 2) math was never my best subject; and 3) I have no idea how the bank can be off by so much month after month. Then I take misery a step further and remember the budget I had planned to set up, and haven't.

The fact is that managing money is just Not Fun. Who, after all, likes to figure out where the money really went? Or anticipate when it's time to fork over the insurance premium? Or rifle through a year's supply of receipts at tax time?

Apple does. The Apple can help you set up a budget, balance your checkbook, analyze your spending habits, and give you information regarding taxes and investments. The Apple can also handle small business finances, even help develop forecasts and business plans. Your records are stored on diskettes; you can get at them whenever you want. The Apple can scan through them to provide you with summary information that guides you to better use of your resources.



Meet Your Personal Finance Manager

Personal Finance Manager from Apple Special Delivery Software is your Family System budget management program. It's designed to help you keep records of expenditures, evaluate your spending habits, reconcile checkbook statements, and maintain tax records.

And it helps you do all this with the programs contained on a single diskette, on which you can also store a year's worth of family records—including all your check transactions, deposits, and cash and credit card purchases. You can flag expenditures so that, come tax time, deductibles fall tidily into appropriate classifications.

Let's say you're building a budget. Personal Finance Manager lets you define as many as 24 budget categories. Yours include—besides the mortgage, food, and other standard departments—your daughter's visits to the orthodontist. You enter expenses (cash, check, or credit card) and summaries show how your actual spending habits compare with the budget limits you've set. The orthodontics, for instance, might not be costing you as much as you thought—so you could invest a little more in that high-yield bond. On the other hand, you might learn that eating out twice a week is carving more out of your pocket than you had imagined.

Or, if you've created a category for service charges and interest payments, you may discover that you're stretching your credit out of your favor. Personal Finance Manager automatically plots budget activity, and shows you a graphic comparison between expenses and allocated budget. With this kind of information, it's easier to adjust your spending habits (or your budget, if it seems unduly restrictive) to make the best use of your money.

You start by setting up your budget. First, enter your ending balance from your last month's bank statement (it doesn't have to be reconciled).

Next, establish your budget categories and assign dollar amounts to them (These dollar amounts aren't cast in concrete—you can change them anytime).

Finally, enter any checks you have outstanding.

Now, anytime you boot the system, you'll see this menu on the screen:

```
*****
* APPLE II PERSONAL FINANCE MANAGER *
* (C) COPYRIGHT, 1980 *
* APPLE COMPUTER INC. *
* SOFTWARE DIMENSIONS INC. *
*****
CHOOSE ONE OF THE FOLLOWING OPTIONS:

< 1> ENTER DATA
< 2> SEARCH/SORT/EDIT DATA
< 3> RECONCILE CHECKBOOK
< 4> BUDGET CATEGORY: DEFINITION
< 5> BUDGET CATEGORY: SUMMARY
< 6> CREDIT ACCOUNTS: DEFINITION
< 7> CREDIT ACCOUNTS: SUMMARY
< 8> STATUS REPORT
< 9> INITIALIZATION
<10> QUIT

WHICH OPTION WOULD YOU LIKE ?
```

Using the "Enter Data" option, you add transactions—such as cash and credit card expenditures—to your records.

The "Data Search/Sort" option provides simple listings of monthly budget entries you specify—such as all entertainment expenditures for the year's first quarter.

"Reconcile Checkbook" doesn't need much explanation—it helps you balance your checkbook against monthly bank statements.

Use the "Budget Category Summary" to compare, say, your actual entertainment expenses with the budget you've set aside for entertainment. To make the comparison, you can choose from three different summaries; two of these let you chart information with graphs.

"Credit Account Summary" works the same way for your credit card accounts.

Where Do I Go From Here?

Once you discover how easy it is for Apple to manage your money on an everyday basis, you

may want to turn it into a partner when you prepare taxes, or a consultant when you review your stock portfolio, or a controller if you're operating a small business. Here are some programs you might want to consider:

The Electronic Worksheet—This kind of program takes the place of calculator, paper, and pencil as it solves any problem you want to tackle using rows and columns. An electronic worksheet employs up to 63 columns and 254 rows that allow you to create—with no programming experience—whatever format you want. It's an absolutely wonderful tool, very difficult to explain in writing, very easy to learn by demonstration. It's worth the trip to your dealer just to see it run. Many software companies offer this type of program "customized" to specific applications:

You can draw from a library of formatted "templates," such as VisiCalc™ Real Estate Templates, that help you scrutinize potential property ventures.

Managers use programs like Plan80 to do financial modeling, create forecasts, and develop pricing strategies.

Financial professionals use electronic worksheets to prepare statements, compute ratios, and modify projections—all in seconds rather than hours or days.

Apple Plot—The Apple plot program allows you to create charts and graphs that represent anything from income and stock activities to caloric intake and miles per gallon. The information you enter will appear either in bar, line, or scatter charts. You can update and label them as you like. Photographed and converted to transparencies, graphs are a natural for presentations. Printed, they can be included in proposals or reports.

Dow Jones Series Portfolio Evaluator and News and Quotes Reporter—Here's one way to keep your finger on the pulse of the stock market. Portfolio Evaluator allows you to store, modify, and update information. You do this by using a "modem" and your telephone. You have instant access to stock quotations for more than 6,000 companies traded on the major exchanges.

The Portfolio Evaluator can also be used in conjunction with Dow Jones News & Quotes Reporter, another program from Apple designed particularly for investors, managers, and executives who need quick access to stock market news and information. News and Quotes reporter hooks the Apple, by telephone, to Dow Jones News/Retrieval Service, where you can get current news stories and headlines from the Wall Street Journal and Barrons.

Both these programs, by the way, include the use of the telephone with the Apple. This is basically what telecommunications is all about—linking the computer to other sources of information through standard communications lines. To learn more about it, read the section on Telecommunications on pages 81–83.

Money Management for Small Business

If you're in, or moving in the direction of, your own small business, you'll find in the Apple additional opportunities for streamlining money management. You can use the Controller to help plan payments and cash collection. It also provides an effective alternative to manual bookkeeping through the Controller's Accounts Payable, Accounts Receivable, and General Ledger Modules. The General Ledger can carry up to 250 accounts and 1,000 entries per month; Accounts Receivable accommodates 250 customer accounts and processes up to 1,000 statements each month, and Accounts Payable carries 100 vendors and allows 300 monthly invoices.

You'll also find programs tailored to specific small business purposes—such as the Apple Cashier, which provides retail store owners with better inventory control and sales monitoring. Dozens of other programs have been designed to address the needs of doctors, lawyers, accountants, architects, and business owners in virtually every area, from insurance to beekeeping.



The Entertaining Apple:

Computer Games of Skill, Imagination, and Strategy

Games. What can I tell you about games? You probably know more than you ever needed to know about games already. Almost everyone has a favorite game, and games make the introduction to computers fun and interesting.

As you explore this arena, you'll find that many games—such as Apple Stellar Invaders and Olympic Decathlon™—make use of Apple's high-resolution graphics. Others, like Apple Adventure, are designed to tickle your imagination and challenge your deductive powers.

Introducing the Family Apple Games

Let's take a look at these games that introduce you to the entertaining side of your Apple.

Apple Stellar Invaders: Against Incredible Odds, Can You Eliminate Them?—Before they bomb you out of existence, you, against incredible odds (one of you, 55 of them) must eliminate an advancing horde of hideous alien invaders. For every alien you wipe out of the sky, you collect points; if you're eliminated, you get a quiet round of taps. This is a favorite of adults as well as children, and a classic computer shoot-em-up.



Microsoft Olympic Decathlon: Testing Your Skill as an Athlete

— Microsoft's Olympic Decathlon invites you, and as many as five friends, to compete in the most strenuous athletic event of all time—the decathlon. Considered the truest test of an athlete, the Decathlon requires excellence in 10 different events associated with running, jumping, and throwing. And the victor is... whoever has the highest score overall, usually the athlete with the best sense of timing, reflexes, and coordination.

Apple Adventure: Computer Fantasy at its Best

— If you've ever enjoyed the company of Bilbo Baggins and Tolkien's contingent of Hobbits, or Lewis Carroll's Alice, or the parade of other fantasy characters that populate libraries, you'll delight in Apple Adventure—the classic computer fantasy game that exercises your imagination and tests your powers of deductive reasoning. With Apple Adventure, you're swept into a world of breathtaking caverns, cheering elves, hair-raising encounters with dragons and dwarves, and things that go "rustle!" in the night. You begin simply enough—at the end of a road. From there, let the Apple be your eyes and ears and hands to search... for what? Well... you'll find out soon enough as you work your way from Novice to Master Adventurer. Apple Adventure can captivate you for hours.

Land Sakes, George, What'll They Think Up Next?

Today's computer games stretch at one end from the simple pleasures of a skeet shoot to complex strategy games demanding reasoning ability and full concentration. In fact, you'll find challenge enough just choosing among them. When you explore your options, you'll find that games vary widely in personality and challenge. They also vary in quality—our best advice to you is, whenever possible, TRY BEFORE YOU BUY. Here's a description of what you can expect:

Fantasy and Adventure Games—Perhaps nowhere is the Apple's imaginative spirit more evident than in fantasy and adventure games that invite you to step into a world of magic, myth, and legend, populated by doughty heroes (often you), damsels in distress, odious beasts, skulking thieves, wily wizards, and bands of dwarves, elves, pirates, and purple worms. The scenarios are virtually unlimited. In some fantasy/adventure games, you race against time to solve mysteries. In some, you work with—or against—other players. And in others, you can even create your own characters.

Arcade-Style Games—Apple's screen comes alive with animation as you attempt to dissolve asteroids before they dissolve you... or zigzag your spaceship through a rain of enemy fire... or confront the enemy tank on an open battlefield. These "simulation" games often involve fast thinking and coordination, but others rival chess in their complexity and variation. In one, two opposing admirals (you and another player or you and the Apple) issue tactical orders in an attempt to overcome the enemy—an attempt that can take hours of careful thought and ingenuity.

Puzzles and Strategy Games—Puzzle and strategy games are designed to challenge your memory or your skill in, say, navigating a ship through narrow passages filled with icebergs and supertankers; mining precious minerals without having the mountain that contains them collapse on you; negotiating a spaceship landing without crashing and burning; even operating a nuclear reactor safely and economically.

Board Games—The Apple can prove a formidable opponent if you enjoy board games such as chess, checkers, Othello, or backgammon. If you're a Monopoly fan, the Apple becomes an animated display board for either the classic edition of the game or the new L.A. version that's mapped with local street names and freeways. The Apple also serves as banker and, hm, policeman on the watch for illegal transactions.

Sports Games—Whatever you can play on a playing field, course, or court, you can play on the Apple: football, baseball, basketball, golf, even boxing and bowling. It's all done with Apple's high-quality graphics animation. In fact, "APPLE BOWL," a game developed here at Apple, achieves such realistic graphics that the game won an award for the best graphics game in 1979.

Card Games—The Apple has all manner of cards up its sleeve for those of you who prefer a friendly game... of blackjack, poker, solitaire, crazy eights, or hearts. Bridge players can sharpen their defensive skills when the Apple through normal auction bidding, becomes the declarer—and hone their playing techniques when they garner the bid.

And After That? ... Looking Ahead

There's no question that the personal computer is revolutionizing the way we live, the way we do business, the way we educate ourselves and our children. In the same way, it's influencing the way we use our leisure time. The proliferation of computer games, for instance, testifies to a brand new genre of entertainment unlike any other visual media. Computer games, at the very least, sharpen coordination as they entertain; at best, they inspire creativity and help perfect reasoning skills. Many computer games undoubtedly will become "classics," in the sense that a good book or film becomes a classic that one generation can pass on to the next. And as computer games increase in sophistication and complexity (some already employ 3-dimensional animation and "voice" sound, they will continue to offer educational as well as entertainment value. Ask your dealer to keep you on a mailing list so you'll be notified when the kinds of games you like arrive.



Text Editing:

Making Fast, Light Work of Words

Gone, thank heavens, are the days when you bent wearily over your typewriter to paint out the x that you made muxh of the word "mush." Or when you had to retype an entire page of your essay just to clarify a minor mid-sentence misspelling. Or when you had to retype an entire report for the sake of a single paragraph on page 2.

With text editing, you can wrap up these repeat performances and toss them out the window. Because text editing, like word processing, is designed to make fast, light work of words. Using a text processor, you can write, revise, and edit practically anything—letters, term papers, proposals, novels—with both efficiency and economy. The text processor, for instance, lets you juggle words around, switch phrases or paragraphs from one spot to another, delete material, even search and replace words you've overused or misspelled. Linked to a printer, the text processor generates letter-perfect documents automatically in formats

such as this
flush left style
that aligns text
along the left
margin

or

this flush right
format which
aligns text
along the
right margin

(or even in
a centered format,
like this).



Introducing Apple Writer: What a Way With Words!

Apple Writer is a text editor we at Apple like so well that we use it ourselves. It's much easier than writing in longhand, shorthand, or even with a typewriter. With Apple Writer, you'll discover, too, how simple it is to be more

creative and more efficient at practically anything you author.

You can be more creative, because you don't have to stop writing to make minor corrections, change paper, or retype material you want to rephrase. You can even write in any order you like, store your bits and pieces, and then arrange for them to be assembled and printed in proper sequence.

You'll find Apple Writer an efficiency expert as well. Besides saving time you otherwise would spend modifying and retyping documents, Apple Writer also saves on paper costs and filing space, because you can store up to 42 pages of a document on a single diskette, always ready to be recalled for revision, or for printing later on.

Let the Tutor Be Your Guide—Apple Writer's tutorial will introduce you to the editor's different functions.

First, it will show you how easy it is to enter text. To begin writing, all you do is type. You don't need to worry about the carriage return (except to distinguish paragraphs)—the Apple Writer simply feeds your thoughts from one line to the next as they flow...like this:

"ALAS, POOR YORICK! I KNEW HIM, HORATIO:
A FELLOW OF INFINITE JEST, OF MOST EXCELLENT FANCY; HE HATH BORNE ME ON HIS BACK A THOUSAND TIMES."

As you enter text, the Apple Writer will randomly split words whenever they bump into the right margin (a feature called "wraparound"). This doesn't effect the final document; when your text is printed, words appear connected, in upper and lower case letters...like this:

Alas, poor Yorick! I knew him, Horatio: a fellow of infinite jest, of most excellent fancy; he hath borne me on his back a thousand times. **Corrections to Make? Nothing to it**—And when you're working, you don't need to worry about misspellings. If Yorick comes out "Yoick," all you do is zoom the cursor █ between the o and i, like this:

YOICK

and plug in the r. As you insert letters, words, phrases, or paragraphs, the text moves right along to make room for them.

With Apple Writer, you're also easily able to turn one paragraph into two, and two into one; to "erase" a word, sentence, or paragraph; to move parts of one paragraph to another; and to insert, move, and save blocks of text.

Search and Replace Whatever You Want, Instantly—And you will learn how to use Apple Writer's "search and replace" mechanism. It helps you correct or change words that you've either misspelled or overused throughout your composition. Say, for example, that poor Yorick has acquired the ignominious nickname "Yoick" in your thesis. To correct this, all you have to do is type a command, then the misspelled word and its correct spelling. Then, with a couple of keystrokes, the Apple Writer will automatically search your document, returning to Yorick his rightful name wherever it was misspelled. If you've overused a word, Apple Writer will lead you through the text, stopping at each occurrence of the word you want to replace. You choose when to insert a synonym.

Text Editor, Word Processor—What's the Difference?

The terms "text editor" and "word processor" were born the day computers and typewriters were lashed together. They meant simply that, rather than type on a typewriter, you typed into a computer, which, in turn, printed your material in any form you wanted. Inasmuch as both text and word processors take the typewriter a giant step forward as an efficient and flexible tool, they are similar. Many times, the terms are used interchangeably. Where they actually part company is in their degree of sophistication.

With a text editor, for example, your screen displays the context of your writing, but not its final form (you tell the printer how you want your writing to look). The screen of the more sophisticated word processor, on the other hand, shows you exactly what will appear in print, page by page. In addition, the word processor has the ability to underscore words, set others in boldface type, set and reset margins—in other words, function on a somewhat grander scale (and at considerably grander cost).

Now That I Know Apple Writer...Where Do I Go From Here?

Probably the first thing you'll want to do with your Apple Writer is link it, through the Apple, to a printer. Many companies offer printers compatible with Apple II computer systems, but together they all generally fall into three categories: thermal printers, dot matrix printers, and letter-quality printers.

Thermal Printers, such as the Apple Silentype Thermal Printer, are, among the three, the most economical. They also are fast, quiet, and highly reliable since they are simplest in construction. These printers use rolls of heat-sensitive paper to produce clear, draft-quality text as well as finely-detailed charts. You'll find a

thermal printer fine for draft-quality projects, but not for those that require letter-quality results.

Dot Matrix Printers create text characters with a series of closely-spaced dots. The dots are imprinted on the paper at the rate of 100 characters per second, or more; this type of printer is certainly the fastest of the three. Dot matrix printers are often used for home as well as business applications that require low-cost, multi-copy printing. In terms of quality, the dot matrix printer stands between the thermal printer and the letter-quality printer, with some of the newest models capable of producing near letter-quality type.

Letter-Quality Printers, the most sophisticated (and costly) of the three, produce documents of better than typewriter quality, and at an average speed of 45 characters per second. These printers are called "impact" printers because a daisy-shaped wheel of characters, similar to a ball of typewriter characters, is the vehicle for imprinting the paper. One system compatible with the Apple II or Apple III is the Qume Sprint 5™ Printer, which can produce all kinds of documents, from form letters printed on letterhead to detailed financial statements. With the letter-quality printer, it's also possible to change type fonts and sizes to suit different needs.

You can also hook Apple Writer to other programs, such as "Goodspell," which checks every word you write against its 14,000-word dictionary...and calls your attention to those it doesn't recognize. Presto! Perfectly spelled papers every time. (Goodspell is available through Apple Special Delivery Software.)

Finally, you may find one day that you need more capabilities, like an 80-column screen or true upper/lower case character display. To acquire these functions, you'll need to purchase a special circuit card that fits into one of the slots in your Apple.

As with printers, you'll find many companies offer products—within a large range of capabilities and prices—that are designed to work with your Apple. And we at Apple are continually working toward more convenient and sophisticated ways of working with words.



The Educated Apple: Bringing the Classroom Home

It's 3:28 and a half. The end of the school day. The second hand is moving, with intolerable sluggishness, toward the bell. It doesn't seem to have made any progress in the last hour or so. Then, the familiar jangle finally sounds and students, in a single great wave, flood out of the classroom.

That's the way things used to be (for some of us, anyway). Today, though, with the introduction of computers into the classroom, 3:28 brings with it a different (Rats! Only two more minutes!) reaction. "It happens here at the end of every day," one high school teacher beams. "Their enthusiasm is really something. We practically have to force them out when it's time to go home!"

So it is with education today. The Apple, established in many school systems throughout the country, has become a classroom tool—as a learning device for students, an aide to instructors, and a helping hand to administrators. For students, the Apple is a drill instructor, stretching the brightest students to their limits, helping the slower ones catch up, and—for the first time—allowing the handicapped to participate in the mainstream of education, at their own pace.

For instructors, the Apple helps prepare teaching materials. It can also diagnose trouble spots students may have with their coursework, prepare and correct tests, maintain student records and calculate grades. And when the Apple moves into the home, its educational value stands out even more. It not only allows the student to take the classroom home, it



becomes a means for parents to participate more actively in their children's education. With the home "library" shelved with educational software, parents can encourage a better understanding of both coursework and "computer literacy"—an issue as critical today as reading and writing.

The Apple's acceptance by schools and parents all over the world has been due to its extensive software library, its reliability, and its flexibility. As an educational tool for classroom and home, the Apple teaches in several different ways:

Drill and Practice—The Apple can drill kids in anything—simple arithmetic, fractions, spelling, grammar, reading comprehension, even Spanish verbs. The Apple reinforces learning through attention-catching sound and graphics.

For example, "Apple Music Theory," developed for the Apple by the Minnesota Educational Computing Consortium (MECC), uses sound and graphics to drill students in music terms, intervals, counting, naming notes, rhythm, scales, and key signatures. "Geometry & Measurement Drill and Practice" (available through Apple Special Delivery Software), provides both elementary and advanced drills on areas, perimeters, lengths, angles, polygons, volumes, and circles.

Tutoring—As tutor, the Apple actually teaches the subject. Equipped with text, graphics, and sound, the Apple "lectures" the student—on bird migration for a class in ornithology, for example. After presenting the material, the Apple may test for comprehension, reviewing portions of the material that the student missed.

Educational Games—Typical of educational games is "Elementary, My Dear Apple," a collection of four games for children 12 years and up. Operating their own lemonade stands in "Lemonade," children learn the basics of economics—profits, losses, and pricing—and the influence of a change in variables, such as the weather or the cost of sugar. "Darts" teaches fractions and fraction estimation by letting students "throw" darts at a number line.

Simulations—It's in the area of simulations that the classroom Apple is most creatively used. For the computer, unlike any other medium, can imitate situations that are otherwise too dangerous, too costly, or too time-consuming for students to experience. With simulations, a student can attempt to survive as a fish in an increasingly polluted food web, or run a nuclear reactor, or manage the national economy...while learning the principles of ecology, nuclear engineering, and economics.

Introducing Microsoft's Typing Tutor

Of all the educational programs we considered when making up The Family System, we chose Typing Tutor™ from Microsoft, for these reasons:

The Whole Family Will Use It—Typing doesn't exclude any age group, and it's a necessary ability in today's world. Gone are the days when good typing scores meant that you were relegated to the secretarial pool. Ask anyone who works (or plays) with a computer—typing is and will remain an essential skill.

It Makes Learning Fun—The Progress Reports and Paragraph Analysis features give you a "score"—something to measure yourself against. Learning to type becomes more like a game than a drudge. So you learn more quickly, with less effort.

You Can Take It Apart and Look at It—You can see how Typing Tutor is teaching you. The owner's booklet explains, on page 21, how to stop the program and look at parts of it.

NOTE: When you open up the Typing Tutor Box, be sure to notice the little 3-page flyer marked "Special Instructions for the Disk Version." This applies to you. Read pages 1 and 2 of the flyer in place of pages 6, 7, and 8 of the owner's booklet. The information on page 3 of the flyer replaces that on page 20 of the booklet.

Where Do I Go From Here?

Building Your Educational Library—With the arrival of Apples in the classroom, educational software is becoming available at a rapid rate. The type of software you choose for your own library will depend on the educational needs of your household. To introduce children of all ages to the computer we have a new line of software from the Children's Computer Workshops a division of CTW, the people who brought you "Sesame Street," "The Electric Company," and "3—2—1 Contact." Included in the CCW Software Packages are some programs addressed to very young children featuring some of the best known muppets including: Ernie and Bert and Big Bird. To further complement classroom teaching you may want to collect drills, tutorials, and simulations to complement classroom studies.

To help you make your choices from among the many instructional programs that are available, we've included the Educational Software Directory as a reference guide. It identifies publishers of educational software and describes the contents of each program that's available—including Apple's "Shell Games," which parents or teachers with no programming knowledge can use to create their own multiple choice, matching, or true/false quizzes.

The Future in Computer-Assisted Instruction (CAI)—Ten years ago, Minnesota might have been known as "The Computing State" because of the major computer manufacturers headquartered there. Today, the title would still be appropriate, for Minnesota leads the nation in providing computer services to students and teachers in classrooms from elementary through university level. It's done through a single organization—The Minnesota Educational Computing Consortium (MECC). MECC coordinates all computer instruction, and through a timesharing system, makes instructional materials available to the more than 2,000 Apples located in schools throughout the state. Today, students and teachers use their Apples to draw from software assembled in this unique central library. And as more states follow Minnesota's lead, schools will improve their ability to meet individual student needs.



Telecommuni- cations with **Your Apple:**

Around the Corner or Around the World

You enter the world of telecommunications every time you pick up your telephone and dial. Or switch on your television set, or radio. Telecommunications is basically a 50-cent word for making fast connections, for moving information quickly from one place to another, around the corner or around the world. Yesterday it was done in a somewhat plodding fashion by Pony Express. Today it's done at the speed of light, with the aid of computers.

So what does telecommunications have to do with you and your Apple? Quite a lot, for with your Apple, you can use telecommunications to:

- search libraries without ever leaving home;
- send and receive mail;
- work at your office from home;
- scan the want ads on community computer bulletin boards;
- talk to your friends;
- take a look at the latest stock quotations;
- play chess with a friend across town.



But How?

You can do any of these things through "networks"—networks that use ordinary communication lines (usually telephone lines) to link one computer to another, anywhere in the world. Which network you use depends on the type of service you want, and on the network used by the people with whom you want to communicate. Briefly these are the types of services you can tap:

Research... Anything—Plugged into a network, your Apple is a link to any one of hundreds of "libraries" you can search at will, without ever leaving your armchair. Each of these libraries houses an information bank, or "data base," which provides subscribers with electronically-updated information on any subject from butterfly wings to Mickey Spillane.

If you happen to have a Learjet, for instance, you might use Lockheed's Jetplan so you could call up and find out which altitude, given the day's weather, will give you most efficient fuel consumption for your flight across the country. As a physician, you might hook up to the National Library of Medicine to investigate antidotes in a poison case. Blood Stock Research catalogues the pedigrees of racehorses, and the New York Times Information Bank catalogues—what else?—all the news that was fit to print.

Perhaps the most widely-used data base is Dow Jones, which the Apple plugs into to keep track of the stock market. Through Apple's "Dow Jones News and Quotes Reporter," you can call

up all published and unpublished stories for the previous three months, as well as quotations for more than 6,000 securities sold on the major exchanges. Apple's "Dow Jones Series Portfolio Evaluator" maintains stock portfolio records (about 100 portfolios of 50 stocks each per diskette), analyzes each for short-and long-term gains and losses, and provides current values.

Getting The News... By Apple—You also can keep up with the news through your Apple. Hooking up to networks such as "The Source" or CompuServe Information Service, you can pick up stories from eleven different news services, including UPI. This way, you can follow news items that might not meet your local editor's criterion as "newsworthy," and you can follow stories with a depth and immediacy that isn't possible through any other news medium, print or broadcast.

Collecting Your Electronic Mail—"Electronic mail" is the term for picking up and sending messages by computer. It's easy; you pick up messages at your convenience, and you leave them for others knowing they'll be properly received. Sending mail electronically, you rise above the limitations of paper-bound mailings. You can transmit messages to as many people as you want (provided they subscribe to the network you're on) with one stroke.

Several networks, including Telenet and Tymnet (the Ma Bells of the computer world; check your telephone directory for offices in your area) offer electronic mail services.

Rent a Mainframe and "Timeshare"—You might also use your Apple and the networks to rent a mainframe computer... or at least the programs and data it contains. When you do this, you are expanding the Apple's ability to perform sophisticated calculations, run complex programs, and draw from large data bases. You also are participating in "timesharing," a term that's used when you "share" with other users a large computer that would be too costly for an individual to own. In timesharing,

the mainframe computer acts like a telephone operator, responding to incoming calls, though at very high speeds. (You're actually timesharing when you tap into the data bases described above).

If you were a teacher in northern Minnesota, for example, you could hook your Apple to the "MECC Timeshare System" in St. Paul, several hundred miles away. This mainframe computer, run by the Minnesota Educational Computing Consortium, is like the Library of Congress for computer-assisted instructional programs. You can draw from it any instructional program you like—something you couldn't do unless you could afford such a library of materials, and the means for their storage.

Or, if much of the work you do is through a computer terminal, you may be able to link your Apple to your big office computer—and save yourself a commute who knows how often.

Community Bulletin Boards—User Groups—local associations of Apple users—provide an opportunity for you to participate in informal neighborhood networks. Through these loosely-formed, dial-up programs, you can pin up and look over the want ads, greetings, and graffiti others have contributed to a community bulletin board.

Community Bulletin Board Systems (CBBS) are usually operated by small business owners who make their own computers available to telephone access. Financial support usually comes through contributions, or the owner's pocket. Apple Bulletin Board Systems (ABBS) are simply CBBS systems established on Apples. To find out about the bulletin boards in your area, contact your local user group.

So How Do I Get In On All This?

Before you can subscribe to a network, you'll need a telephone, a "modem" (MOdulator/DEModulator), and perhaps an interface card. The modem is a device that translates electrical signals into sounds (and back again) suitable for telephone transmission. There are different kinds of modems, some offering more features than others. Costs vary according to the number of functions a modem performs, as well as the speed at which it transmits signals. Your dealer is your best source of information about modems.

Subscribing to Data Base Networks—To learn more about data bases that are available to you, talk to your reference librarian, or look at the Directory of On-Line Data Bases.

Costs for data base services vary, but often include an entry fee and an hourly charge for computer time (plus telephone charges). When you do subscribe to a data base (Dow Jones, for example), your Apple is hooked up to it through Tymnet or Telenet. Other networks, though, may use their own transmission lines.

Home Information/Electronic Mail—Many Apple owners who use the networks tie into The Source—the first and largest home information and mail network—or CompuServe Information Service (formerly Micronet). With either of these networks, you can send messages to others on the network, store messages and other text in files, perform some word processing, tap into the UPI newswire, shop by computer, and search data bases.

To find out more about The Source, write: Telecomputing Corporation of America, 1616 Anderson Road, McLean, VA 22102.

For information on CIS, write: Information Service Division, CompuServe Incorporated, 5000 Arlington Blvd., Columbus, OH 43220.



P

rogramming the Apple: For Fun and Profit

As we said a little earlier, using the Apple is like driving a car. You don't need to know how to build a car before you can drive it. You don't even have to know how the engine works. So, before you read further, be assured that it's not necessary to know how to build the car (program the Apple) before you can drive it (use programs someone else has written for you). In fact, with the wealth of easy-to-use programs already available—not to mention those just offstage, waiting to be introduced—you can spend a lifetime or two exploring the options. As an Apple user, it's strictly up to you how much of a "mechanic" you want to become.

Learning to program the computer yourself—that is, learning to write instructions you want the computer to follow—simply adds another dimension to your experience with the Apple. If astronomy is your interest, you might write a program that calculates the position of all the planets on any night of the year. As a weaver, you might write a program to help you design loom patterns. Or, as a teacher, you might have an inventive instructional idea that deserves its own program.

You may even wind up writing programs you can sell—perhaps in a small way, through user groups or through companies that operate like book-publishing houses: they buy, market, and distribute computer programs. Apple's own Special Delivery Software operates like the latter, distributing a selection of high-quality, independently written computer programs.

The library of commercially available programs is expanding rapidly. So are the ways in which people are using Apples. There is still an unfilled demand for programs in every field of endeavor: education, architecture, athletics, medicine, law, construction, retailing, hotel management, real estate... to name just a few.



If you have special knowledge in one area or another, chances are that there are other Apple users who could benefit from it. We don't want to mislead you—like any fine skill, programming takes time, effort, and concentration to master. But the results are immediate and very gratifying, whether for monetary or purely personal profit.

Getting Started

There are four manuals packed with your Apple Family System. If you browse through their Tables of Contents, you'll find that three of the four have chapters titled "Getting Started." We'd like to clear up that confusion right now. So here's a synopsis of the contents of each of the manuals, and some suggestions on how to use them to learn to program your Apple:

The Applesoft Tutorial—This is the book you should start with if you're brand-new to programming. Most of the information in its first chapter and some from its second was included in the earlier sections of this book, so you may wish to skim those sections. The real secret to success in learning to program is to take your time and try everything. You'll be writing your first programs in the first hour!

The Applesoft II Basic Programming Reference Manual—Applesoft BASIC has capabilities beyond the ones you learned in the Applesoft Tutorial.

They're all here in the Programming Reference Manual. Although it's intended (as its name implies) to be used as a reference book, you can derive considerable benefit from simply going through it cover-to-cover, trying all the examples and making up your own.

The DOS Manual—DOS (usually pronounced "doss") is short for Disk Operating System. An operating system is the way a computer arranges real-world data logically so it can find it again. It's the interface (that's computerese for "go-between") for you and the tracks and sectors—the magnetic "grooves"—that make up the diskettes in your disk drive. You tell DOS what you want to name a file; DOS saves that file and remembers where to look for it the next time you ask for the file by name.

DOS performs a multitude of mundane tasks for you. In the YOU DO IT section of this book, when you copied and initialized diskettes, you were using some utilities, or utility programs, that are part of DOS. DOS also opens, closes, reads, writes, deletes, renames...and on and on. In a way, an operating system is like service in a restaurant, or lighting in a play, or guidance from a manager: the better it is, the less you notice it. A good operating system should be so natural to use that it's nearly invisible.

The DOS Manual serves as a good instructional guide to the operating system, as well as a comprehensive reference manual. Needless to say, you can skip the first chapter, "Installation and Handling," and some of the material in the "Getting Started" chapter will already be familiar to you. But as you progress through the DOS Manual, doing all the exercises and taking your time, you'll begin to realize that DOS adds profound power to the Apple.

Apple II Reference Manual—This manual gets right down to the “nuts and bolts” of your Apple, and is a reference manual in the true sense of the word. Numbers of people have written elaborate, sophisticated programs without ever opening it. But those who are developing products that require intimate knowledge of the Apple—and there are many, many of these folks—find it indispensable. And its glossary is useful to naive and experienced users alike.

Learning the Language of Computer Programming

We explained a little earlier (see pages 25–26) that, to tell the computer what you want it to do, you have to speak a language that it understands—a language like French or Russian, but written especially for the computer, that consists of a collection of words and symbols.

The Apple, actually, is a rather gifted linguist. It understands at least two dialects of BASIC, plus Pascal, PILOT, FORTRAN, and several lesser-known languages. You'll find that each of these languages is designed for different uses of the computer—BASIC for general purpose programming, PILOT for educational programs, Pascal for large business, scientific, and educational programs, and FORTRAN for mathematics, engineering, and scientific applications.

BASIC—(Applesoft variety) is the first language you'll use to speak to your Apple. An acronym for “Beginners All-purpose Symbolic Instruction Code,” BASIC is the most widely used personal computer language. Why? Because it

uses common English words (READ, PRINT, FOR, LET, GO TO) and mathematical symbols (+, -, *, /) that allow you to create interesting and useful programs without programming experience. The Apple speaks two dialects of BASIC—Applesoft Extended Floating Point BASIC (Applesoft for short), and Integer BASIC. Applesoft is the resident language in your Apple. It's a fast, convenient language you'll find useful for general purpose as well as financial programming, because it makes use of decimal points that “float” wherever they're needed to display a number accurately.

Integer BASIC, because it understands only whole numbers (integers), is more suited to general programming and graphics that don't require accuracy with real numbers. For example, if in Integer BASIC you asked the Apple to print the number “4.3526” it would print “4.” If, in Applesoft, you asked the Apple to print “4.3526” it would print “4.3526.” Many games programs, which do not require decimal places, are written in Integer BASIC. In order to run these programs, you'll need to purchase an Integer Card for your Apple.

PILOT—Programmed Inquiry, Learning Or Teaching—PILOT is a language teachers use to convert lesson ideas into programs for students. The beauty of this language is that it allows educators with little or no programming experience to combine color graphics, animation,

sound effects, and text into creative programs for students progressing at different rates. It even allows teachers to design their own characters to produce lessons in Russian, Greek, or Japanese. PILOT is a language that would be a good investment for parents who want to participate more fully in their children's education.

Pascal Spoken Here. Named after the 17th-century French mathematician, Pascal is a language with a larger, more complex "vocabulary" than BASIC or PILOT. It's what is referred to as a "structured language," and its use of "P-Code" allows Apple Pascal programs to run on other computers (and vice versa) with minimal modifications. Thus Pascal is frequently used for larger, more complex applications in business, science, and education. To use Pascal on your Apple, you'll need to purchase the Apple Language System, which includes a card to install in your Apple (enabling you to use both BASICs as well as Pascal), Language System diskettes, and a complete set of manuals. Most Pascal users also find it convenient to attach an additional disk drive to their system, though this is not strictly necessary.

FORTTRAN—FORMula TRANslation.

FORTTRAN is a well-established programming language, especially suitable for work in mathematics, engineering, and the sciences. In other

words, its forte is "number crunching" and it doesn't like to waste its time with words and text. Apple provides FORTRAN for technical professionals and educators who are already familiar with the FORTRAN language and are using programs written in FORTRAN.

Where Do I Go From Here?

The programming you learn from the Applesoft Tutorial and the other manuals are meant to give you the fundamentals of programming. How far you go with programming is entirely up to you. To begin, follow the tutorial to get to know BASIC. Later on, you may decide to sign up for a programming class that's offered through a nearby community college or university. Your local library is also a good source of information—in fact, some city libraries already have Apples in residence. User groups in your area are a constant source of advice and encouragement. And, of course, your dealer is most up-to-date about products, old and new, that are available to expand the capabilities of your Apple. Really, the sky's the limit in programming, because, like the spoken or written word, it provides an unlimited source for both creative and practical expression.

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